REGIONAL SEAS

UNITED NATIONS ENVIRONMENT PROGRAMME

# *Marine mammals: global plan of action*

*UNEP Regional Seas Reports and Studies No. 55*

*Prepared in co-operation with*

FAO



UNEP 1985

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The preparation of this document was supported by project FP/5103-78-02.

For bibliographic purposes this document may be cited as:

FAO/UNEP: Marine mammals: global plan of action. UNEP Regional Seas Reports and Studies No. 55. UNEP, 1985.

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# PREFACE

In response to Governing Council decisions 59 (IV) of 13 April 1976 and 88 (V) of 25 May 1977, UNEP initiated, in co-operation with FAO, a project to develop a global plan of action for marine mammals.

The first draft of this plan was circulated to Governments, international organizations and individuals for comment, and a progress report on the Plan was submitted by the Executive Director to the Governing Council at its ninth session. In its decision 9/10 A of 26 May 1981, the Council noted this report and requested the Executive Director to continue the preparation of the Plan with a view to its submission to the Council at its eleventh session.

Due to the complexity of the projects to be implemented in support of the Plan and the procedures laid down in the Governing Council decision 9/25 of 26 May 1981, on the financing of action plans, it was not possible to finalize the plan in time for the Council's eleventh session. However, an ad hoc interagency consultation on the plan was convened by UNEP and FAO in Nairobi from 10 to 14 January 1983. The consultation, which was attended by representatives from IWC, IUCN, SCAR, CITES, UNESCO/IOC, FAO and UNEP reviewed the Action Plan and identified 18 projects for implementation under it.

By paragraph 11 of decision 11/7 of 24 May 1983, the Governing Council requested the Executive Director "to finalize a financial plan for the implementation of the draft global plan of action for the conservation, management and utilization of marine mammals and submit it to the Council at its twelfth session".

To comply with this decision, and in accordance with the procedures laid down in decision 9/25, the Executive Director requested on October 1983 that Governments indicate commitments for the Plan's implementation.

The Plan and associated projects for its implementation were revised and updated in the light of comments received at the FAO Committee of Fisheries, which met from 10 to 19 October 1983. The Ad Hoc Planning and Co-ordinating Committee for the Plan held its second consultation at FAO Headquarters, Rome, from 11 to 13 January 1984 and agreed on the final version of the Draft Plan, including nine revised projects with a total budget of US$ 11,842,000 for implementation under the Plan.

The twelfth session of UNEP Governing Council (Nairobi, 16-29 May 1984) considered the final version of the plan of action (document UNEP/GC.12/15, Annex I) and adopted the following decision (decision 12/12 I of 28 May 1984):

"The Governing Council

1. Endorses the Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals as a timely and valuable framework for policy planning and programme formulation by the international community;

2. Notes the efforts of the Executive Director to prepare and submit a financial plan for the implementation of the Plan of Action;

3. Appeals to all Governments and international organizations to make firm commitments to the Plan of Action;

4. Requests the Executive Director to promote a broad-based response to the Plan of Action, drawing upon the capabilities of existing institutions to the maximum extent possible and utilizing the catalytic role of the United Nations Environment Programme as appropriate;

5. Requests the Executive Director to take the following approach in securing additional financial commitments in support of the Plan of Action:

   (a) To circulate to potential donors fact sheets on individual projects identified for the implementation of the Plan;

   (b) To investigate the possibility, in the case of projects with a strong regional component, of adopting a regional approach to their funding in consultation with the countries concerned;

6. Invites the Executive Director to report to the Governing Council at its thirteenth session on the response of Governments and international organizations to the Plan of Action."

The International Whaling Commission also considered the Action Plan at its 36th meeting in Buenos Aires (June 1984) and endorsed its implementation.

Section A of the present document reproduces Annex I of document UNEP/GC.12/15, (Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals) and Section B reproduces Annex II, (Draft Financial Plan) of the same document.

CONTENTS

# A. GLOBAL PLAN OF ACTION FOR THE CONSERVATION, MANAGEMENT AND UTILIZATION OF MARINE MAMMALS

## SUMMARY

1. For the purpose of the Plan, marine mammals are taken to include those mammals which spend all or a large proportion of their time in the sea and obtain their food predominantly from it. They also include a few species whose ancestors were marine but which have moved into fresh waters.

2. These marine mammals belong to four groups: cetaceans, pinnipeds, sirenians and some others. The populations of many of these animals have been severely depleted by human activities, mainly by hunting, but also by incidental catches in fishing nets, destruction of their habitats and disturbance of breeding colonies; pollution has also had serious effects on some species in some areas.

3. The most seriously depleted large whales are the right and bowhead whales and, to a lesser extent, the blue and humpback whales. The fin and sei whales, although less depleted, are well below their most productive levels in most areas. The minke whale has in most areas been relatively little affected by exploitation. The status of sperm whales is particularly difficult to assess, but the population seems to be still very large.

4. There is more uncertainty about the status of a number of the small cetaceans, but probably those in the most critical condition are some of the freshwater forms whose habitats have been gravely impoverished by the construction of dams, siltation and water pollution.

5. Many of the pinnipeds which were seriously reduced by hunting in the past have made good recoveries, and the forms in greatest danger at present are the several species of monk seals, whose habitat requirements make them particularly susceptible to coastal modification and disturbance, and some fur seals and sea lions.

6. The sirenians, which live in coastal and fresh waters in tropical areas, have been severely reduced throughout much of their range as a result of hunting (mainly subsistence but locally some commercial), habitat modification and disturbance.

7. Public concern about the threatened status of many of the marine mammals, particularly the large whales, rose rapidly in the early seventies. This led to the growth of whale-watching and similar activities, which attached so-called low- consumptive values to the animals, in addition to the economic values associated with exploitation.

8. As a consequence of this rising public concern, the United Nations Conference on the Human Environment (Stockholm, 1972) made recommendations relating to the conservation of marine mammals. In the same year, FAO, through the Advisory Committee of Experts on Marine Resources Research (ACMRR), inaugurated a broad review of the status of marine mammals. This culminated in the Scientific Consultation in Bergen in 1976, to which UNEP

contributed substantial support. In reviewing the results of this study, FAO's Committee on Fisheries recommended that FAO should continue its activities in relation to marine mammals and that it should do so in co-operation with UNEP. As a result of this recommendation a joint FAO/UNEP project was set up to develop the Plan of Action which is summarized here.

9. It is proposed that, following approval by their respective governing bodies, FAO and UNEP should consult on the measures which should be taken to implement the Plan. It seems appropriate, in view of their existing involvement and the general nature of their responsibilities, that FAO and UNEP should continue to play key roles as the implementation develops, but the global nature of the proposals and the wide range of disciplines involved will make it essential that many other bodies should take a very active part. Particularly important among these bodies are UNESCO, the Intergovernmental Oceanographic Commission (IOC), the International Whaling Commission (IWC) and, among other organizations, the International Union for the Conservation of Nature and Natural Resources (IUCN).

10. The size and scope of the Plan are such that it will be necessary to ensure that there are effective administrative, supervisory and advisory mechanisms for its implementation. It is proposed that this should consist of an ad hoc planning and co-ordinating committee, an ad hoc advisory committee of scientists and a small full-time professional secretariat. These mechanisms should be established by FAO and UNEP jointly, in consultation with other bodies as appropriate. The secretariat would be under the general supervision of the planning and co-ordinating committee. It would be located either at the headquarters of one of the participating bodies or at an appropriate independent site such as Cambridge, United Kingdom. Such arrangements would ensure co-ordination, avoid overlaps and duplication of efforts, and maintain momentum in the implementation of the global plan of action.

11. The steps needed to achieve effective conservation, management and utilization of marine mammals are numerous and complex, and cannot be fully identified at present. Therefore, although the total plan is seen as a long-term project of indefinite duration, the activities listed in the financial plan cover the medium-term period devoted to taking specific steps to deal with some urgent situations which can currently be identified, to improving in a number of areas the existing conservation mechanisms relating to marine mammals, and to obtaining information which will be needed as the implementation of the plan proceeds. A Review Meeting is proposed to be held at the end of the first biennium to examine the results obtained and develop further plans for implementation.

12. For the purpose of the Plan, "conservation" is taken to include rational exploitation, as well as the management of human activities which affect the marine mammals directly or indirectly, including exploitation. It includes also actions related to trade in products from marine mammals, to the various threats to their well-being and to the realization of human values from them on a sustainable basis. The term "management" is used to mean the positive

actions which may be undertaken to achieve the conservation of a species, population or ecosystem. It embraces, for example, creation of sanctuaries, prohibition of public access to breeding areas, catch limits and other restrictions on exploitation. Thus, while conservation is a concept, management is a means by which that concept is put into effect.

13. The Plan puts forward a series of Recommendations which are summarized and classified in table 1, with an indication of the bodies which it is proprosed should implement each Recommendation. In addition to those relating to establishing the machinery described in paragraph 10 above, the Recommendations deal with the following general areas of activity:

(a) Identification of conservation and management objectives;

(b) Actions to meet present critical situations;

(c) Actions to increase present knowledge so as to provide a basis for further stages of the Plan;

(d) Actions to improve the overall machinery of conservation, including:

(i) Improvement in the availability of information;

(ii) Increase in the number of scientists working on marine mammals;

(iii) Increase in scientific activities;

(iv) Development of concepts and mechanisms for the establishment of protected areas for marine mammals;

(v) Improvement in public understanding of marine mammals and their conservation.

14. In the area of objectives, an interim definition of "optimum population level" is proposed for use as a guideline in the first biennium of the Plan. It is recommended that the Review Meeting should consider means by which a review of information, concepts and alternatives for global objectives for the conservation of marine mammals could be undertaken as the implementation of the Plan progresses.

15. Some marine mammal populations face critical situations about which sufficient information is already available to enable appropriate actions to be identified. It is proposed that the Plan groups (secretariat, ad hoc planning and co-ordinating committee and scientific advisory committee) should identify such cases, and that UNEP, IUCN and other bodies should try to stimulate the necessary actions.

16. A series of studies, by consultants or in other ways, are proposed as means of obtaining the information needed to develop further activities for implementation. These studies relate to:

(a) Exploitation of marine mammals not under international control;

(b) Intentional killing of marine mammals for reasons other than direct exploitation, and the associated effects of marine mammals on the fisheries concerned;

(c) Incidental killing of marine mammals in other fisheries;

(d) Occurrence of contaminants in marine mammals and their environments;

(e) Man-induced changes in breeding areas;

(f) Effects on marine mammals of fisheries for their food species or for species competing with them for food;

(g) Management of resources shared between two or more nations.

17. Improvement in the availability of information refers both to increased speed and coverage in the publication of information on catches of marine mammals and trade in products derived from them and to improvement of the systems for the storage and availability of scientific information relating to marine mammals and their environments.

18. It is proposed that the number of scientists working on marine mammals could be increased by providing fellowships to enable scientists already having the necessary basic skills to gain experience with marine mammals, by providing increased employment opportunities in this field, and by enabling experienced scientists to travel more widely to stimulate and assist junior workers.

19. A very important area in which scientific activities should be expanded is the provision of opportunities for independent assessment of the scientific bases on which conservation measures are taken, and measures to this end are proposed. The expansion of observation networks making use of volunteer workers is also suggested.

20. The problems relating to the establishment of areas in which marine mammals may be protected are complex, and involve biological, legal and political aspects. A number of studies are proposed aimed at clarification of some of these issues and at developing steps toward the creation of further sanctuary areas.

21. The matters of law and administration dealt with in the Plan relate in general terms to the development of better mechanisms for the effective conservation of marine mammals, both nationally and internationally. Among the matters covered by the Plan are:

(a) Assistance to individual nations in the improvement of their legal and administrative machinery in this field;

(b) Relevant articles of the United Nations Convention on the Law of the Sea;

(c) Management of the Southern Ocean;

(d) Shared resources;

(e) Migratory species;

(f) World Heritage Lists;

(g) The Biosphere Reserve programme;

(h) Workshop on legal situation.

22. The nature of the need for increasing public understanding of marine mammals and their conservation varies greatly among human communities. The Plan considers ways to examine these problems and identify the most importantg needs for and ways of promoting public understanding under various conditions. It also proposes ways of improving the availability of existing information and materials.

## Chapter I

## INTRODUCTION

1.1 This Plan of Action arose as a means of stimulating and co-ordinating the substantial improvement in the conservation of marine mammals which was implicitly called for in the decisions of the Stockholm Conference, of the Bergen Consultation, and of FAO and UNEP, as discussed in later paragraphs. 1/ This need for better conservation measures, and for an expansion of research, is due in the first place to the depleted or threatened state of many marine mammal populations, deficiencies in the machinery and available measures for conservation, and the inadequacy of the scientific knowledge required as a basis for these measures. The problems involved in improving the conservation of marine mammals are both complex and world-wide. At present much of the essential knowledge is lacking, and there are major deficiencies in the administrative and legal machinery which is required.

1.2 The living marine mammals have evolved from diverse groups and occupied a wide variety of habitats, but they have many common biological and economic characteristics. They have many different ways of life, but many of them have similar mutual impacts with human activities. Their survival and well-being are liable to threats from a common array of factors - human and environmental. They are often treated as a group, sometimes distinguished from other types of living marine resources, in international conventions, in national legislation and in the United Nations Convention on the Law of the Sea. They have been identified as a group in decisions of UNEP and FAO. It is for these reasons that, as a group, they fittingly form the subject of a single comprehensive plan for consideration by the governing bodies of both organizations.

1.3 The marine mammals include a number of groups or individual species of animals whose ancestors were terrestrial but which have adapted to spending all, or a large proportion of their time in the sea and to obtaining their food predominantly from it. Some of them depend on land or ice for breeding and for rests. Others are wholly aquatic, but all are air-breathers and must, therefore, have continuing access to the water surface. Some species, belonging to several groups, have moved from the sea into fresh water while retaining their aquatic dependence. They are considered to be marine mammals for the purpose of this Plan. Many kinds of marine mammals became extinct over geological time; some species have been exterminated by man in recent centuries, and some others are now on the verge of extinction.

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1/ See "Mammals in the Seas, Vol. I: Report of the FAO/ACMRR Working Party on Marine Mammals, FAO, 1978; Vol. II: Pinniped Species Summaries and Report on Sirenians, FAO, 1978; Vol. III: General Papers and Large Cetaceans, FAO, 1981; Vol. IV: Small Cetaceans, Seals, Sirenians and Otters, FAO, 1982".

1.4 The following are the groups of marine mammals:

(a) The cetaceans (whales and dolphins). This term covers two groups:

(i) Odontoceti (toothed cetaceans) - the sperm whale and all dolphins, including the larger species commonly referred to as "whales" (killer, bottlenose, pilot, etc.);

(ii) Mysticeti (baleen whales) - this group includes five "rorquals" (blue, fin, Bryde's sei, minke), the humpback, two species of right whales and the gray whale;

(b) The pinnipeds (seals, sealions). This term also covers two groups:

(i) Otariidae - the walking or eared seals: fur seals, sealions, walruses;

(ii) Phocidae - the crawling or earless seals, including elephant seals, monk seals and many others.

(c) The sirenians (sea-cows). The living forms are all tropical - the dugong which live in a wide range of marine and freshwater habitats, from coastal waters to far up rivers, and three species of manatee which live in waters of a wide range of habitat, from coastal waters to far up rivers;

(d) Some otters (family Mustelldae) live in the sea. These include the exclusively marine sea otter of the North Pacific and the South American marine otter. Some other species are found both in the sea and in fresh water.

1.5 The marine mammals have been important to man for centuries, as sources of oils, meat, skins and bone and other by-products. Because many of them are large animals, a single kill may be very valuable. Because they must surface to breathe - and, when on land or ice in the case of pinnipeds, move only clumsily - they are often highly vulnerable. Originally, they were hunted in many parts of the world for subsistence by local people, but by about the fourteenth century commercial exploitation by peoples of European origin had begun to develop. By the sixteenth century it had gravely depleted some whale populations in the North Atlantic, and by the mid-nineteenth century commercial exploitation had extended throughout the world's oceans and had affected many of the most vulnerable and attractive species and populations. Technological advances in the late nineteenth and early twentieth centuriesopened the way for operations on those large whale species which had previously been immune from attack. When modern commercial whaling in the Southern Ocean was at its peak in the 1930s, the catches only of the great whales reached 15 per cent, by weight, of all the production from the living resources of the sea - and that was after some of the largest populations of whales and seals had already been depleted in the nineteenth century. By the mid-twentieth century one species and many local populations of marine mammals had been exterminated, many had been brought to critically low levels, and others had been greatly depleted. A few previously depleted populations had recovered with the cessation of hunting. Among other marine animals probably only the turtles have been so drastically reduced on such a world-wide scale.

1.6 Probably many pinnipeds and some small cetaceans have always been perceived by fishermen as serious nuisances - competing for the fish which provided their livelihood and damaging fishing gear. This conflict has become much more intense in recent times with the expansion of the world's commercial fisheries, although it has probably always been principally a coastal effect. Parallel with this there has been an increase in the incidental or accidental kill of marine mammals by their capture or entanglement in commercial fishing gear, and this has been both a coastal (e.g., humpback whales in herring trap nets in the northeast Atlantic) and a high-seas problem (e.g., porpoises in tuna purse seines in the eastern tropical Pacific). The importance of these incidental kills has also increased in some areas with depletion of the marine mammal populations.

1.7 Since about 1970, new, so-called "low consumptive" values of some marine mammals have begun to be realized in some countries: for example, "whale-watching" has become an economically significant activity and maintenance of small cetaceans in captivity for public exhibition has spread world-wide.

1.8 Despite the great depredations which had been made on the whale stocks, no effective attempt was made to regulate hunting until the International Whaling Commission (IWC) was established in 1946. While its regulations did limit the size of the catches in the Southern Ocean to some extent even from its beginning, it failed to prevent reduction of some species to critically low levels during the 1950s and 1960s, as well as serious depletion of other species. Since the early 1970s, however, the IWC has reduced the catches by its member nations to or below replacement levels, and a stage has now been reached at which no catching is allowed on stocks which are believed to be appreciably below the MSY level. At its 34th meeting, in 1982, the Commission decided that "... catch limits for the killing for commercial purposes of whales from all stocks for the 1986 coastal and the 1985/86 pelagic seasons and thereafter shall be zero. This provision will be kept under review, based upon the best scientific advice and, by 1990 at the latest, the Commission will undertake a comprehensive assessment of the effects of this decision on whale stocks and consider modification of this provision and the establishment of other catch limits." As of the end of 1983, three countries' objections to this decision were still outstanding. This decision of the IWC reflects the growth of popular interest in the large whales since the Stockholm Conference and with a steady increase in the number of non-whaling nations joining the Commission. FAO has from time to time, since the 1960s, involved itself in the work of the IWC, generally at the scientific level, but also on the policy level on occasions when the IWC was in a crisis situation. Until recently little attention has been paid to the conservation of the smaller cetaceans, probably because few serious threats to them were apparent.

1.9 At the 1972 meeting of the FAO Committee on Fisheries (COFI), Governments expressed fears about the status of whale populations and the effectiveness of whaling regulations. Although the main thrust of the discussion at that time concerned the conservation of whales, COFI responded to the widespread public concern by arranging for an independent review of the status of whales, dolphins, seals and other marine mammals by a working party of ACMRR. 2/

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2/ FAO FISH REP. (194), 1977.

1.10 The second expression of views by Governments in 1972 was at the United Nations Conference on the Human Environment in Stockholm. The recommendations (Recommendation 33) were, however, of a more political nature than those made by COFI: to seek to strengthen IWC, to increase research and to secure a ten-year moratorium on commercial whaling. Although the Recommendation concerned whales only, and the Conference did not make explicit recommendations regarding other marine mammals, a number of the other Recommendations have a bearing on the formulation of this Plan of Action.

1.11 At present, the conservation of pinnipeds, sirenians or otters is mainly a matter of national concern. However, several international agreements and conventions apply to pinnipeds.

1.12 Subsequent to the Stockholm Conference and the establishment of UNEP, further decisions relating to marine mammals were taken by the Environment Fund and the Governing Council. Those specifically dealing with marine mammals concerned the regulation of whaling, the conduct of research on cetaceans and support for and co-sponsorship of the FAO activity with respect to all marine mammals. Other decisions, while not specifically mentioning marine mammals, dealt with matters of indirect importance to the conservation of marine mammals. They concerned the "oceans" Programme Priority; the conservation of nature, wildlife and genetic resources; marine pollution; shared natural resources; environmental law; relationship with non-governmental organizations; public awareness; and information exchange and training.

1.13 The studies of the Working Party established by ACMRR in 1972 constituted the first definite step toward the development of a plan of action for the conservation of marine mammals. These studies climaxed in the widely representative Scientific Consultation held in Bergen in 1976. UNEP, from shortly after its establishment, had taken an interest in this undertaking and had provided substantial support for it, including the Bergen Consultation, through an FAO/UNEP joint project. Financial support was also given by several interested nations.

1.14 In 1977, after taking the results of the Consultation into account, the Working Party presented its recommendations to ACMRR. Following their endorsement by ACMRR, they were considered by COFI, which recommended that FAO should continue its interest in marine mammals; it should co-operate with UNEP but avoid unnecessary duplication. These recommendations were accepted by FAO and led to an agreement between FAO and UNEP to develop a Plan of Action as a co-operative project. The present Plan can thus be seen as a major step toward the elaboration and implementation of the ACMRR recommendations.

1.15 The disciplinary scope of such a Plan of Action is necessarily broad. It should include scientific research - both on the animals and on their environment; study of the functioning and interrelationships of international mechanisms and of national and international legal problems; examination of economic and social factors and technological developments which affect the

pattern of exploitation of marine mammals; education of the public and of particular groups of users of the sea, especially fishermen, as to the nature and present status of the mammals and their role in marine ecosystems. There is also a need to formulate more clearly the many objectives of mankind in relation to marine mammals.

1.16 The large areas occupied by many marine mammals indicate that any effective Plan of Action must be a global one. This is made still more necessary by the political and economic aspects which must be encountered in any effective conservation strategy. Few species of marine mammals, and not many populations, are confined to the waters of a single State. Most are found in the waters of a number of States and many, including all the large whales, also live in areas beyond national jurisdiction. Further, in many species the normal migrations will take some individual animals into marine areas under the jurisdiction of several States in a single year. In addition, some nations may have an interest in marine mammals outside their own waters; they may be concerned in exploiting them, they may wish to undertake research in them, or they may utilize or trade in products derived from them. Data on the distribution of many species of marine mammals are given in Appendix 1.

1.17 The disciplinary breadth and worldwide coverage needed for an effective Plan of Action are reflected in the variety of organizations which would have to participate if the Plan were to be successfully implemented. It is envisaged that FAO and UNEP would have the primary responsibilty for setting up the arrangements for putting the Plan into effect and that they would also undertake a number of the specific tasks that are identified in it. A number of the other intergovernmental agencies, both inside and outside the United Nations system, would also be called upon to undertake particular activities which were appropriate to their responsibilities. A significant role could also be played by some non-governmental organizations whose interests and capabilities place them in a good position to carry out certain tasks. The International Union for the Conservation of Nature and Natural Resources (IUCN) would appear to occupy a key position.

1.18 The success of the Plan will, of course, also depend on the co-operation of the many Governments concerned with marine mammals, and building up this co-operation will be an important feature of the Plan.

1.19 Although most of the various activities identified in the Plan would be undertaken by existing bodies, successful implementation of the Plan will require a new and distinct mechanism to deal with the day-to-day operations, co-ordination between the various bodies involved, maintenance of continuity and scientific advice. It is, therefore, proposed that overall planning and supervision should be undertaken by an ad hoc committee, established by FAO and UNEP jointly, and that this should be supported by a small but professional full-time secretariat and by an ad hoc scientific advisory committee of independent experts.

1.20 The present proposals are regarded as the initiation of a long-term plan. In the first two years, activities which were seen to be urgently necessary for the conservation of marine mammals would be undertaken. However, this period would also include the development of plans for future implementation, and particularly the establishment of the capabilities and the collection of the information needed for this purpose.

## Chapter II

## THE NATURE OF THE PROBLEM

### II.1 Values of marine mammals

2.1 The values which mankind can derive from the marine mammals fall mainly into two categories; these are the consumptive ones in which the value derived is almost directly proportional to the quantity of animals killed, and the non-consumptive ones derived from animals living freely in their environment. There is also a category of low-consumptive values which require the taking of only a small number of animals for their realization.

2.2 The consumptive values include both the direct usefulness of the products derived from the animals killed, and the economic returns obtained by those engaged in the hunting operations. From very early times many species of marine mammals have been valuable to man as sources of meat, oils, skins and furs. Many coastal communities were dependent on these and other products such as bone for their subsistence. A few such communities are still at least partly dependent upon marine mammals in this way. Although some of these basic products are still important as objects of large-scale hunting operations (e.g., meat of baleen whales and fur of fur seals), modern technology has made many of the products of secondary benefit to man mainly through industrial uses (e.g., oils in mechanical processes, tanning and margarine manufacture, meal in livestock feeding). It is to be noted that marine mammals are still a valuable resource for human food in some countries. This fact was stressed recently at the 1983 session of COFI. The monetary value to be obtained for the products initially of whaling and later also of sealing led to the rise of commercial whaling and sealing, and the very large markets which opened up stimulated the development of commercial killing on a large scale.

2.3 Whaling under the rules of IWC is apparently still attractive and other stocks which are protected by IWC have been exploited in the recent past, presumably for gain. The present value of the commercial catches is estimated to be about US$200 million annually. This is, however, probably less than 10 per cent of the sustainable catches which could be taken from fully recovered stocks. Such recovery is however likely to take several decades for many stocks and even longer for some such as the northern hemisphere right whales.

2.4 Many of the larger populations of seals, including fur seals, which have been depleted in the past, have recovered with the cessation of hunting and under successful management regimes. Other large populations, such as the crab-eater seals, have never been seriously hunted. The possible economic value of many seal populations is not being realized at present. Hunting of dolphins and sirenians is still largely confined to local subsistence activities.

2.5 The non-consumptive and low-consumptive values associated with watching marine mammals either in their natural environment or in oceanaria have increased greatly in the last 20 years. Whale-watching, for example, has become an economically significant activity, and maintenance of small

cetaceans in captivity for public exhibition has spread world-wide. While the places where these activities can be practiced with animals under natural conditions are severely limited, there are probably still substantial opportunities for expansions. The non-consumptive utilization of cetacean resources was the object of a conference sponsored by Seychelles and a number of organizations, held in Boston (Massachusetts, United States of America) in June 1983, which made several recommendations on: (i) legal aspects of non-consumptive uses of cetaceans; (ii) benign research; (iii) value of protected areas; (iv) ecological value of cetaceans; (v) recreational whale-watching; (vi) cetaceans in captivity; (vii) educational and cultural uses and values of cetaceans; (viii) conflicts of use; and (ix) some moral questions.

2.6 Marine mammals may sometimes bring indirect economic benefits to man which are also non-consumptive. Examples are the clearance of plant-choked water ways by the grazing of manatees, and possibly the accidental "herding" of fish into nets by dolphins. It has been suggested that such ecological and behavioural factors could be much further developed for human benefit.

2.7 There are several other values attached to the marine mammals which are important, but not measurable in economic terms. Scientific interest in them is at present very high. This interest ranges from inquiry about the biological role of the mammals in marine ecosystems to investigation of their adaptations for deep diving, navigating, for sensing their environment and for communicating with each other. Any or all of these interests could lead to benefits for man in his attempts to work in the sea, and in other ways. One aspect of this research is the attempt to use these animals as assistants in marine operations.

2.8 Marine mammals have played important cultural roles in human affairs since the dawn of civilization. By some coastal peoples, dolphins or whales have been seen as divine and treated accordingly. Relics of this attitude persist in some localities. In some other places symbolic values are attached to whales, and religious rites are associated with the catching and butchering of them. These reinforce the economic or subsistence value of the products of the peoples so engaged. In some places seals and sirenians also have special cultural values.

2.9 In the past 20 years the whales have acquired for millions of people in many countries a remarkable symbolic value of a new kind. This is related to the worldwide movement for environmental conservation, but constitutes a distinct offshoot from it. A new myth about the whales in process of formulation - of gentle, friendly, vulnerable yet intelligent creatures, deserving of special consideration by humans. This myth, even if much of its basis in scientifically established fact is still questionable, nevertheless supports strong political movements for the conservation of the entire group. Considerable intellectual effort - scientific and other - is now being devoted to further examination of the basis for the myth. This myth appears to be extended from the whales not only to the smaller cetaceans, some of which do provide most of the supporting evidence for high potential in intelligence and communication, but also to the other marine mammals which show little signs of capabilities beyond those found in many terrestrial mammals.

2.10 The various values summarized above are not always mutually exclusive. The most complete antithesis lies between realization of consumptive values by killing animals and full adoption of the "myth" discussed above with its implication that marine mammals, or some of them, have such special characteristics that it is ethically unacceptable to kill them for the benefit of man. Adoption of this view implies that the definition of conservation accepted at the beginning of this document is inappropriate, and that for the animals concerned conservation should, in fact, be synonymous with preservation. However, retaining the definition of conservation which implies the wise management of resources, both consumptive and non-consumptive values are positively related to the abundance of the animals, although the form of the relationship, if it could be determined, could well be found to be very different. However, full realization requires abundant populations in both cases. Sources of antithesis however still remain. It would obviously be unacceptable to carry on commercial whaling or sealing operations on a local whale population or seal colony which was also the subject of organized whale or seal watching. Moreover, it would not always be sufficient to prevent hunting operations in areas suitable for public observation of the animals. Hunting of the same populations elsewhere in their range would be likely to make the animals shy or aggressive and unsuitable for observation. However there are many populations, such as those of the pelagic rorquals which do not occupy areas easily accessible to the public and especially to tourists, and it may be that properly managed consumptive use can be made of these populations with a minimum of interference with non-consumptive uses.

2.11 Other values also may be compatible with hunting. Some traditional symbolic values may indeed be directly related to capture and killing the animals; for example, among the Eskimos the low-consumptive values associated with capture of animals for scientific research and public display are also compatible with commercial hunting.

2.12 Nevertheless, the existence of the different kinds of values, and some incompatibilities in realizing them, lead to conflicts in human affairs; some of these conflicts have in recent years assumed dramatic form - even violent confrontations. Such conflicts are evident at local, national and international levels. They stem from differences of economic interests among groups and nations, from different cultural perceptions and in some cases from ignorance of the relevant facts about the animals concerned. Resolution of such conflicts, as well as harmonious realization of values, call for research to establish the facts, public awareness of the facts and of the limits of knowledge, awareness by authorities of the views of people, an appropriate body of law and means to implement it, and governmental and inter-governmental arrangements for regulation and negotiation. One of the main reasons why the present Plan is required is, in fact, as a step towards the resolution of these conflicts.

II.2 Threats to marine mammals

2.13 Notwithstanding, and indeed partly on account of, the benefits which marine mammals offer to mankind, their well-being and sometimes even their survival are threatened by a variety of human activities. By far the most

important of these has been hunting with the object of obtaining valuable products. The effects of over-exploitation are well-known and the low reproductive rate of many marine mammals means that recovery is often slow even when hunting stops. Other human activities which produce threats to marine mammals include:

- Demand for particular industrial raw materials in technologically advanced societies;
- Commercialization of human sexuality and desire for luxury;
- Mass increase in recreational and business travel by people from affluent societies;
- Pollution of the sea;
- Increased human occupation of, or impact on, coastal zones;
- Greatly intensified or diversified fishing activities;
- The unregulated conduct of scientific research;
- The expansion of the industry of live capture.

2.14 Deliberate killing of marine mammals in which the carcasses are not utilized is probably almost limited to action by or on behalf of fishermen who believe they are adversely affected by the mammals. The mammals may be having a direct and visible effect by removing fish from lines or nets, or by damaging gear; they may also be seen as competitors, reducing the fish stocks and so the fishermen's catches. The actions against the mammals may range from the casual shooting by individual fishermen of seals seen near their nets to organized operations with or without Government support, in which large numbers of mammals may be killed.

2.15 Incidental, and unintentional, killing of marine mammals occurs most often when the animals become entangled in nets and other fishing gear. It is most prevalent in commercial fishing operations, but there may be significant destruction of marine mammals where large-meshed nets are used to control the shark threat to bathing beaches, as on the east coast of Australia. There may be signs that these mortalities can increase with the development of fisheries on species on which the marine mammals prey, as a result both of increase in the amount of gear in use, and of reduction in the abundance of the prey. This may have happened, for example, in the apparent increase in the entanglement of humpback whales on the Canadian east coast coincidentally with the development of a major fishery for the capelin on which the whales feed.

2.16 Probably the greatest incidental mortality of marine mammals has been that of several species of dolphins taken in the purse seine fishery for yellow fin tuna in the eastern tropical Pacific. This, however, differs from most incidental kills in that the porpoise schools are sought out and the nets deliberately set round them, because they mark the position of invisible tuna

schools. During the 1960s and early 1970s these kills were of the order of 500,000 animals annually, and reduced some porpoise stocks well below optimum levels. However, this case illustrates the fact that effective conservation action is possible, even when there is an important advantage to fishermen in taking the mammals. A variety of actions imposed on the industry by the United States and Mexican Governments have reduced the current catch to about 20,000 and these are taken almost entirely from populations in a safe condition.

2.17 The need for protection from unnecessary disturbances may be considered as a special aspect of protection from adverse environmental change. It is noteworthy that an important aspect of the problem arises from public interest in marine mammals, e.g., from "whale watching". This is probably most significant where the populations are subject to possible disturbance on their breeding grounds, e.g., gray whales in Mexico.

2.18 The threat of damage to populations through adverse changes in their breeding areas is largely confined to those species which breed in aggregations either on land, on islands, in fresh waters, and in enclosed waters close to land, and where the breeding areas are adjacent to centres of populations or industrial development. Some pinnipeds, and among cetaceans the gray whale and the freshwater dolphins, are the most vulnerable marine mammals in this respect.

2.19 The increasing development of large-scale fisheries for small organisms on which marine mammals feed may constitute a threat both to the recovery of depleted stocks and to the continued well-being of now healthy stocks. The potentially greatest problem, however, occurs in the Southern Ocean, where interest in the development of a krill fishery has grown dramatically in recent years. The level to which the krill catches are likely to develop is still far from clear, but large continuing catches seem bound to have some effect on the rate of recovery of the depleted whale stocks. Knowledge of the whale ecosystem is still much too inadequate to enable any firm statements to be made as to the effect on the whales of any particular level of catches of krill.

2.20 The ACMRR Working Party noted that toxic pollution poses a severe threat to small cetaceans, particularly in semi-enclosed waters such as the Baltic and Mediterranean Seas and the Bay of Fundy. Probably pollutants having the most serious effects are the organochlorines such as PCBs, DDT and dieldrin, although heavy metals may also be having adverse effects; there is evidence that high concentrations of organochlorines can also adversely affect the reproduction of pinnipeds. The question of the extent of the possible effects of oil spills on marine mammals is still largely unresolved, although they could harm pinnipeds by contamination of their pelage and by skin irritation. There is also the possibility that underwater noise from vessels and other human activities such as geological surveying by sonic techniques can constitute a form of noise pollution to which the cetaceans may be seriously sensitive on account of their dependence on acoustic processes for such purposes as communication and location of prey. The presence of pollutants may also preclude the use of marine mammals as food for humans or livestock.

## II.3 Interactions with fisheries

2.21 The preceding section has described a number of ways in which fisheries for other species give rise to threats to marine mammals. Some of these threats arise from deliberate actions taken because the marine mammals are seen as adversely affecting the yield, or economic profitability, of the fishery. Others arise as incidental consequences of the way in which the fishery is conducted; these may occur either because the fishery directly causes the deaths of marine mammals or because it is directed towards, and therefore reduces the abundance of, organisms upon which the mammals feed. The possibility also exists that marine mammals could benefit from fisheries on other species. Individuals, for example, seals in the South-east Atlantic, have certainly learnt to take advantage of the easily available fish in fishermen's nets. Benefits to populations could probably occur, however, in the case of fisheries for species which compete with marine mammals for food, since reduction in their numbers might leave more food available for the mammals. This may have occurred in the Southern Ocean following the depletion of the large baleen whales, one of the major predators on krill. It has been suggested that there has been a resultant increase in krill abundance, which has caused increases in seals, penguins and other consumers of krill.

2.22 The threats to marine mammals arising from deliberate actions referred to in the above paragraph occur because the mammals themselves are seen as threats to the yield or economic return of existing fisheries. While it is often difficult to quantify the adverse effects which mammals have on the fisheries in any particular case, there can be no doubt that in a number of instances it is of considerable importance. Damage to fishing nets and removal or spoiling of fish in them is very obvious to the fishermen concerned, and can be roughly quantified without too much difficulty. Less obvious and quantifiable, but none the less real, may be the reduction in catches in some fisheries due to predation by mammals competing with fishermen for the same stock of fish.

2.23 Development of appropriate management objectives and strategies where interactions occur between marine mammals and fisheries for other species therefore needs to give consideration to at least four aspects:

(a) The economic and social consequences for existing or impending fisheries;

(b) The nature and economic and social consequences of any benefits, other than those from the fishery, which are now derived from either the marine mammals or any other components of the ecosystem;

(c) The avoidance of irreversible changes in the ecosystem concerned, particularly such as would prevent the realization of future benefits of a different nature from those now realized;

(d) Any special status to be given to marine mammals.

2.24 Assessment of the economic and social consequences of any particular strategy requires quantitative knowledge not only of both the existing industry and its interactions with the mammals concerned, but also of the

effects which would be produced by any changes in the numbers of mammals. Some of this information may be obtained without great difficulty, such as the amount of damage done to nets by seals in a particular area, or possibly the amount of commercial fish eaten by the seals. It will be much more difficult, however, to assess the amount by which fishermen's catches are reduced as a result of the consumption by seals. Extrapolation to obtain estimates of the effects of possible courses of action will encounter still greater problems. As a first approximation, the damage to nets might be linearly related to the abundance of seals, but extrapolation of most other effects calls for a sound knowledge not only of the specific population dynamics and often of the behaviour of the fish and the mammals, but also of the functional interactions between them. This knowledge is probably not available at present for any system; a lack which increases the need to take a cautious approach in the development of strategy so as to minimize the risks of undue depletion of any species. Where the destruction of marine mammals is incidental to a fishery for other species, extrapolation also is necessary to estimate the consequences of the changes in costs and yields that would result from the modification of existing practices in order to reduce the deaths of marine mammals to any specific extent.

2.25 The most easily identifiable of the other benefits which may be derived from marine mammals at present are probably those associated with the tourist industry, such as whale-watching and visiting seal colonies. It is possible that in some human communities, particularly those of a small and isolated nature, the economic and social values of the tourist and fishing industries may be fairly evenly balanced. The community as a whole may then benefit by accepting some reductions, due to the presence of mammals, in the direct benefits derived from the fishing industry. In theory it might be possible, in such cases, to estimate an optimum mammal population level which would combine acceptable adverse effects on the fishery with a substantial return from the tourist industry. However, here again present knowledge is probably inadequate to enable such estimates to be made. More important, perhaps, not only would any visible killing be probably unacceptable to tourists, but any such activities, even if out of sight, would be almost certain to reduce the tameness of the animals and with it much of their attractiveness to visitors.

2.26 The principle that exploitation of any species should not lead to the reduction of either that species or of other components of the ecosystem to irreversibly low levels has recently been incorporated in the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR). It has been extended there to include the provision that exploitation shall not seriously delay the return of already depleted populations to about their optimum levels. In the application of this principle, one of the basic problems is the identification of minimum population levels at which recovery can be confidently expected to take place. Looked at the other way, these levels will be close to those below which the risk of falling to extinction is high even in the absence of exploitation. There is still great uncertainty about the identification of such levels, and it is likely that they depend not only upon population size relative to the equilibrium level but also upon the absolute population size. This uncertainty indicates the need for caution in determining the minimum acceptable population. In addition, the lower the population level the longer the time which it will take to return to any "optimum" level.

2.27 A number of countries have recognized the special status of marine mammals to the extent of passing special legislation prohibiting not only killing but also any form of harasssment of marine mammals within their jurisdiction or by their nationals. Such legislation appears, and in a number of cases has been interpreted, to prohibit fishermen from killing or even frightening mammals damaging their gear or interfering with their catches. It may also be interpreted as prohibiting activities which incidentally kill marine mammals. The reality of the interactions between fishing industries and marine mammals must however be recognized. This implies that some reduction of marine mammal populations may have to be accepted in some circumstances, and generally in some specific areas, in order to maximize the combined benefits from the mammals and from the fishery. It seems likely, therefore, that as the legislative situation matures some of the present idealistic and totally prohibitive legislation may be modified to permit a balanced approach that will allow certain fisheries to continue to have some degree of impact on marine mammals but subject to principles such as those discussed above. This development can be seen in the United States purse-seine fishery for tuna in the eastern tropical Pacific. This is being allowed to continue to take some porpoises, despite the generally protective United States legislation, but only in strictly limited and greatly reduced numbers and only from those species which are assessed as being at or above their "optimum" level.

II.4 Inadequacies in the present situation

2.28 Most of the matters discussed in the preceding section constitute threats to marine mammals because there are inadequacies in, or a complete absence of, arrangements to deal with them. In the ideal situation, the resources within each ecosystem would be managed in such a way as to maximize the benefits to humanity derived from the ecosystem as a whole. It is likely that in many systems total management of this kind would require the populations of certain species, possibly including some marine mammals, to be brought to levels different from those which would maximize the benefits from that population in an otherwise unexploited system. However, the knowledge required to establish "system optimum" levels is as yet very far from adequate. This applies both to the biological knowledge required for understanding of the structure and behaviour of marine ecosystems and to the social and economic insights needed for appreciation of the processes by which benefits are obtained. Lack of this knowledge and insight probably constitutes the most basic present inadequacy. It is not, however, the most critical. For the present, it is much more urgent to try to bring individual populations to highly productive levels likely to be in the vicinity of the "optimum", however defined, and particularly to try to remove situations threatening to reduce populations below these levels.

2.29 The inadequacies concerned are essentially inadequacies in human institutions. They include inadequacies in policy, failure of management arrangements, inappropriate or inadequately enforced laws, uncertainties and gaps in scientific knowledge, and failures in the diffusion to those concerned of what is known to specialists; those concerned are particularly administrators, but also include other groups such as the fishing industry, as well as the public at large.

2.30 Failure, particularly by administrators and legislators, but also by special interest groups and the public at large, to appreciate these inadequacies may engender a feeling of unwarranted complacency, and thus slow down the taking of necessary action. This may be regarded as a kind of secondary threat to the achievement of the measures needed to remedy primary threats.

II.5 The extent of national interests in marine mammals and the basis for international action

2.31 The most direct concern a nation may have with marine mammals is with those species which inhabit or visit the areas under its jurisdiction, or for which it operates catching industries or trades in the products. The nations with the strongest direct interest are the large nations with long and varied coastlines extending through several climatic zones, and maritime nations with wide-ranging interests in the exploitation of whales or seals. There are however, a large number of nations with populations of one or more species living within their territorial or maritime jurisdictions. These countries are spread through all zoogeographic regions. The total number of countries which could be involved in the implementation of a comprehensive Plan of Action would exceed 90.

2.32 The economic interests range from subsistence production of meat, oil and skins to very highly capitalized and technically sophisticated hunting and processing industries. All economic classes of nations are concerned - developed and developing, market economies and centrally planned economies; even some land-locked countries import and process raw products, and conduct research. All countries operating fishing or merchant vessels are likely to have some impact on marine mammals. A total of 130 States Members of the United Nations probably have some degree of direct interest in one or more groups of marine mammals; this does not include a considerable number of dependent territories, especially islands.

2.33 With the rise of the widespread popular interest in marine mammals, many Governments are now taking administrative and legislative action in support of the conservation of marine mammals, whether or not they have at this time any direct interest in the sense used above. In addition to domestic legislation, these actions extend, sometimes vigorously, into the international field in such areas as scientific research and participation in international organizations.

2.34 Reasons for the necessity of international co-operation, on bilateral, regional and global scales, may be summarized as follows:

(a) Current problems regarding conservation, the conduct of scientific research, the development of law, the determination of policy and ethical considerations are all of very broad concern. Therefore, extensive exchanges of information, consultation and debate are desirable for the harmonization of viewpoints and of actions;

(b) Most marine mammals spend all or part of their lives in sea areas or in coastal zones under the jurisdiction of two or more States;

(c) Many marine mammals spend much of their lives in sea areas beyond national jurisdictions, and they are then subject only to the consequences of national jurisdiction over persons and vessels and of such agreements as nations may freely enter;

(d) The levels of economic, social, scientific and technical development of some States with potential direct interest in marine mammals are such that they may need assistance from other nations with facilities, relevant skills and experience in the practice of management and conservation of marine mammals and their ecosystems, and in the conduct of scientific research, educational programmes, etc., with respect to them. Effective conservation often depends on the understanding and involvement of people in small communities; international exchanges at that level would be useful;

(e) Trade in products from marine mammals is largely international in character. The main non-consumptive utilization is probably by such activities as whale-watching, and involves a significant contribution to international tourism.

2.35 Most marine mammals, including the threatened species, inhabit the waters of more than one country. This calls, the least, for co-operation in information exchange, consultation and advice. The whales are nearly all migratory, as are several of the smaller cetaceans; the dugong may also be migratory in some regions. In many cases it is not known to what extent particular marine mammal populations are trans-national in distribution but they are in most cases more likely than not to be so distributed. Despite the extension of national jurisdictions up to 200 nautical miles, a number of marine mammals, including some of the most economically important ones, spend much of their time in ocean areas outside national jurisdiction. These include most of the large whales, some small cetaceans and some species of seals. They include the originally great baleen whale populations of the Southern Ocean, and important sperm whale populations. Finally, most products from marine mammals enter international trade; even the realization of non-consumptive economic values is, to some extent, international in character. The wide range of scientific research being conducted calls for international co-operation at both governmental and non-governmental levels.

2.36 International action towards the conservation of marine mammals takes place both inside and outside the United Nations framework. The greatest United Nations activity is through the media of FAO and its subsidiary bodies, and through UNEP. UNESCO also has some involvement in its specialized areas including both education and the marine environment, the latter through IOC. Intergovernmental actions outside the United Nations have their origin in a great range of international conventions; bilateral, restricted and open ended. Some establish executive bodies in the form of commissions; others exist mainly to co-ordinate and stimulate national activities. Some are concerned primarily with the conservation of particular marine mammals, and of these IWC and the North Pacific Fur Seal Commission (NPFSC) are the outstanding examples; others are concerned with marine mammals because of their more general concern with ocean affairs; others again because of other characteristics of marine mammals than their marine habitat. Some bodies are

concerned exclusively with the conduct of scientific research, some include this with other functions, and some take different types of actions and rely on others for scientific advice. Some national legislation other than that enacted as a result of international agreements has international consequences; for example, laws regarding restrictions on imports/exports and registration and operation of vessels, and national laws intended to apply to persons subject to national jurisdiction whether or not they are within that country or its waters.

2.37 A number of important internationally based research programmes have also been launched in recent years which either concentrate primarily on marine mammals or include marine mammals as an important component of their field of study. Among these are the International Decade of Cetacean Research (IDCR) under IWC, the Long-term Expanded Programme of Ocean Exploration and Research (LEPOR) under IOC, the Biological Investigation of Marine Antarctic Systems and Stocks (BIOMASS) under the Scientific Committee on Antarctic Research (SCAR)/the Scientific Committee on Oceanic Research (SCOR)/and ACMRR, and also some of the marine programmes of IUCN and the World Wildlife Fund (WWF) and other NGOs such as the International Institute for Environmental Development.

2.38 An annotated and categorized list of the major international bodies and programmes referred to in this document is given in appendix 2.

## Chapter III

## OBJECTIVES, PRINCIPLES AND STRUCTURE OF THE PLAN

### III.1 The objectives of the Plan

3.1 The basic objective of the Plan is to promote the effective implementation of a policy for marine mammals which is as widely acceptable as possible among the governments and peoples of the world. No such agreed policy exists at present and its formulation cannot be expected to be an easy or rapid process. The need for the Plan as a mechanism for accelerating the development of improved conservation of marine mammals is however too urgent to permit its deferment until an agreed policy has been achieved. Formulation of policy should therefore go hand in hand with the development and implementation of the Plan, and should indeed be one of its components.

3.2 The definition of conservation suggested in paragraph 12, which includes consumptive exploitation for human benefit among the ways in which the values attached to marine mammals can be realized, may not be easily acceptable to those Governments or individuals who believe that at least some marine mammals have special qualities which make their killing inadmissible. However, its implication that the marine mammal populations should be maintained in a highly productive condition would have the consequence that such a conservation strategy would aim at ensuring that the populations were kept in a state capable of benefiting from a more fully protective policy if this were adopted in the future. This definition is not incompatible with that adopted in the World Conservation Strategy with respect to living resources: "The management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations, while maintaining its potential to meet the needs and aspirations of future generations. Thus conservation is positive, embracing preservation, maintenance, sustainable utilization, restoration and enhancement of the natural environment."

3.3 The basic long-term objectives of the Plan are directed toward conservation in the above sense, and include:

(a) Prevention of further extinctions, resulting from human activities, of taxonomically distinguishable forms of marine mammals (species, sub-species, and tribes/races) or of distinct populations of those forms insofar as such populations may be recognized;

(b) Maintenance in optimal states of those populations of marine mammals which are regarded as resources for the uses and enjoyment of mankind, and restoration to such states of those which have been depleted by exploitation or otherwise severely reduced by human activities;

(c) Ensuring that any exploitative use of marine mammal population is conducted in such a way that wide options for alternative future uses are retained;

(d) Ensuring that any exploitative or low-consumptive use of marine mammal populations is conducted in a humane manner and with the minimum disruptive effect on the populations, particularly on the efficiency of reproduction;

(e) Ensuring that sympathetic consideration is given to sectors of human communities, at whatever stage of social or economic development, which are culturally and/or economically dependent on marine mammals, so as not suddenly to disrupt their cultures or cause undue economic hardship to them.

3.4 To provide the necessary conditions for the achievement of these primary objectives, the following secondary long-term objectives must also be pursued:

(a) Ensuring such continuing research, of adequate scale and scope, on the nature of the marine mammals, and the ecosystems they inhabit, as will provide a better basis for future actions with respect to them, taking due account of economic, social, ecological and broadly cultural factors;

(b) Ensuring a broad understanding by the general public of the nature of marine mammals, especially as revealed by scientific research, and of their past, present and future roles in marine ecosystems, to the end that such understanding may be reflected in the policies and practices of Governments, both national and local, and in the international sphere; in particular, ensuring that this understanding exists among sectors of the human community whose daily activities may directly affect marine mammals and their environment.

3.5 In the above statement of long-term objectives, the concept of optimal states in respect of those populations regarded as resources for mankind raises questions of definition. For a single population this may be taken to be a level of population abundance that allows the benefits obtained from that population to be maximized over a long period. However, if two or more populations exist in the same area and interact, the greatest combined long-term benefits from the populations viewed as a single resource may be obtained when one or other population is kept somewhat below the optimum level for that population considered in isolation. Unfortunately, understanding of dynamics of interacting populations is not sufficient to determine optimum levels for complex interacting systems and, in practice, it may only be possible to consider optimum levels in terms of those for each population, which will maximize benefits from that population considered individually. This still leaves open the question of what measures should be used in assessing the benefits from an individual population. The ACMRR Working Party, in considering this situation, pointed out that "there would be value in considering each species or species group separately in relation to objectives which are now considered relevant to their management, and to possible future trends in these objectives". This statement represents a useful simplification of the problem, since it attempts to remove irrelevancies from the discussion; it can be further strengthened by extending the individual considerations to population groups in appropriate cases. Even with this simplification, however, definition of optimum levels would still be open to great debate in many instances. For the purposes of the Plan, it is desirable to adopt a definition of optimum level which can form a safe and satisfactory basis for action. Major debates will still be possible in many cases as to the relation of particular populations to the optimum. Further difficulties may arise when interacting species are being simultaneously exploited or managed.

The overall importance of these uncertainties should however not be exaggerated, although they are critical for certain populations. It is likely that the majority of populations are clearly above or clearly below the optimum, so that the appropriate direction of action is evident. It is equally true that the populations lying somewhere in the vicinity of the optimum, so that the uncertainties of knowledge become very important, are often those for which continuation of present or recent exploitation is most open to debate.

3.6 In view of the need to avoid delays in necessary conservation actions caused by debate as to the appropriate definitions of optimum levels to employ it.

Recommendation 1

It is recommended that:

Governments, organizations and groups involved in actions under the Plan should define, for these purposes, a population at the optimum level as one that is not at present significantly below the level of maximum net productivity, and has no trend which would take it below that level.

3.7 It is not considered necessary for present purposes to develop a more precise definition of "maximum net productivity". With many population models the differences between levels arising from different definitions are generally slight, and give even smaller differences between the corresponding productivities. In nearly all cases these differences would be much less than the range of uncertainty in the population estimates. The definition proposed in Recommendation 1 is, in effect, very close to that adopted in article II of the Convention for the Conservation of Antarctic Marine Living Resources.

III.2 Principles

3.8 In the light of the facts set out in chapter II, six basic principles of the Plan can be established:

(a) It should serve to stimulate, guide, assist and, where necessary, co-ordinate the activities of the existing organizations of all kinds. Only where existing organizations and agreements are not adequate, and evidently cannot be adapted to deal with perceived problems, should consideration be given to the creation of new bodies;

(b) While emphasis must be given to international actions, nations should be assisted, on their request, in the identification of problems and the implementation of solutions to them, including those to be found only through participation of those nations in international forums;

(c) Solutions to problems should be based as far as possible on a clear identification and appraisal of the existing threats in each situation and their likely future development;

(d) While the solutions to conservation problems will usually be based to an important degree on the application of the results of appropriate research in the natural sciences, they will almost always have to be integrated with knowledge derived from other fields of study;

(e) Improved policies for the conservation of marine mammals must take account, among other things, of their ecological role in the oceans and of any particular features they may have which call for special consideration. Understanding of these aspects will call for research over a wide range of scientific disciplines. Policies based on such research will not however find consensus or be possible to implement unless the results of the research are widely known and their significance understood;

(f) Implementation should be based on recognition of cultural and ecological variety in various regions and situations, and of a requirement for sensitive and flexible responses to the needs of human societies which may be affected by conservation measures.

3.9 A number of other plans of action, formulated under the aegis of UNEP in execution of its catalysis role, are relevant to the objectives of the present Plan. These include the Mediterranean Action Plan and the Plans of Action for other regional seas as these are completed and adopted by States and organizations. Plans of action with respect to particular species of marine mammals, such as the Mediterranean monk seal, and for a system of cetacean santuaries should be considered as integral parts of the present global Plan. It may be possible to arrange for some activities under the Plan to be funded by the UNEP Regional Seas Programme.

III.3 Responsibilities for implementation

3.10 The activities required for the implementation of the Plan will extend over a great diversity of scientific, administrative and social fields. The Plan will therefore need to draw upon the interests and capabilities of the many bodies and groups which have an interest in marine mammals. These include government international agencies and non-governmental organizations. In accordance with Principle (a) in the preceding section, an important feature of the Plan must be the identification of the appropriate bodies to undertake the lead and supporting roles in each task, and the establishment of the appropriate groupings and linkages between them.

3.11 Central to the operation will be bodies which are global in scope and have broad interests in the conservation and management of marine mammals and their environment. Among these bodies a prime position should be taken by FAO and UNEP, but they also include IWC, the Secretariats of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on the Conservation of Migratory Species of Wild Animals, UNESCO/IOC, the Scientific Committee on Antarctic Research (SCAR) and IUCN. A second and larger group of organizations is those having a continous and global, but sectoral, interest in marine mammals either with respect to particular groups of them, or particular aspects of their conservation. A third group would comprise organizations like those in the second group but

which are regional in scope; and a fourth group would include all those other organizations, global and regional, whose activities affect the marine mammals, or which have a significant interest in them, but which do not necessarily have a continuous programme of relevant action. The affiliations and interests of some of these bodies are summarized in appendix 2.

3.12 Origination and development of the Plan to the present stage have been largely a co-operative undertaking between FAO and UNEP, both of which have definite although rather different responsibilities with regard to marine mammals. The process of this development has been described in chapter I.

3.13 In brief, FAO's responsibilities include the promotion of conservation and management of living resources and, in the marine area, the mammals form an important component of these resources. Within the mandate for world food production, FAO has an important and unique role in connexion with the conservation and rational utilization of marine mammals. Its concern is therefore with the development of measures which will maintain the marine mammal populations in an "optimum" condition, and will enable the maximum benefits to be derived from them, including those benefits obtained by harvesting if this is seen to be desirable. In the case of those stocks which have been reduced below the optimum level, this interest extends to the promotion of measures for their restoration, including such protective measures as may be desirable. FAO's interest in the marine environment arises from the dependence of the productivity of the marine resources upon a "health" ecosystem.

3.14 Similarly briefly, UNEP has a specific mandate to identify environmental problems and promote and co-ordinate solutions and actions by appropriate United Nations organizations, Governments and other bodies. Under this mandate, it has a programme in Living Marine Resources, and whales and other marine mammals are seen as important components of these resources. UNEP's special interest in these animals also arises from its strong concern for the protection and preservation of endangered species in general.

3.15 Thus the interests of FAO and UNEP in marine mammals are to a large degree complementary. FAO has a primary interest in them as food resources but recognizes that this interest extends into the protection of the productivity of the environment and the protection and restoration of the stocks which have been depleted below the level at which sustainable exploitation is acceptable. UNEP has a primary interest in marine mammals as important components of marine ecosystems, and therefore in their protection and maintenance as potentially valuable resources; it has a particular interest in the protection of threatened species.

3.16 In this situation it would not be appropriate for FAO and UNEP to limit their activities to supporting the preparation of the Plan and then simply undertaking specific tasks during its implementation. Following consideration of the Plan by the governing bodies of FAO and UNEP, the first significant step towards its implementation should be the negotiation between FAO and UNEP of joint mechanisms by which implementation of the Plan can be initiated.

This will involve agreement on the means by which the secretariat responsibilities are to be met and on the way in which other bodies are to be brought into the implementation of the Plan. Subsequently, in the execution of the Plan, the particular activities which will be undertaken by each body can be expected to relate to the areas in which they have special interests and competence. They would also be conditioned by the differences in their functions within the United Nations system: FAO as a specialized agency with executive functions and UNEP as a catalysing and co-ordinating programme.

3.17 Other intergovernmental agencies having a special interest in marine mammals, but outside the United Nations system, should be involved at an early stage in the preparations for implementation of the Plan. IWC could be expected to play a particularly important role in this respect.

III.4 Structure

3.18 Consideration of the values of marine mammals and the nature of continuing and emerging threats to them and their environment as set out in chapter II leads to a five-part Plan. The proposed five areas of concentration are:

A. Policy formulation

B. Regulatory and protective measures

C. Improvement of scientific knowledge

D. Improvement of law and its application

E. Enhancement of public understanding

These are not listed in any order of priority; in fact, they would be better represented as a mesh with actions in each area lined with those in every other area. Furthermore, activities regarding education and training should form parts of the Plan in several of the areas of concentration.

The question of priorities is discussed in a later chapter.

## Chapter IV

## AREAS OF CONCENTRATION UNDER THE PLAN

### IV.1 Area of Concentration A - Policy formulation

4.1 ACMRR reported that "the scientific community is conscious that existing formulations of the objectives of conservation and management of marine mammals and their environment, as embodied in various conventions and agreements, are not all consistent with each other, and may not in all cases be appropriate in changing situations with respect to living resources, nor reflect evolving human attitudes toward those resources and to the biosphere as a whole". ACMRR observed in this connection that "the planning and implementation of a research programme adequate in scale, and appropriate in disciplinary scope and orientation, requires clear understanding of the objectives the programme is intended to serve". The same may be said about the formulation of conservation and management measures, and the content of programes for enhancing public awareness of the issues.

4.2 ACMRR considered this matter to be particularly important. It recommended (Recommendation 1) that intergovernmental action be initiated urgently within the United Nations system "for explicit formulation of the many objectives of mankind in relation to marine mammals", and further that international bodies concerned with marine mammals and their environment "be informed that the need for examination of inconsistencies among the objectives embodied in various conventions and agreements dealing with marine mammals is perceived by the scientific community".

4.3 The ACMRR recommendation drew attention to the needs for:

(a) Explicit formulation of the many objectives of mankind in relation to marine mammals;

(b) Examination of inconsistencies among the objectives embodied in various conventions and agreements.

4.4 It should be noted that an important distinction is being made here between the formulation of policy objectives and the development of strategy. The former is essentially a technical task involving co-ordination of studies in the scientific, economic and social fields. The latter is a political activity involving the development of guidelines for actions aimed at meeting national, or international goals. Achievement of the identified objectives for the conservation and management of marine mammals should be an important component of the national goals, but the relative weight to be attached to each objective, and the speed and means by which it is approached, are matters of political judgement conditioned by a variety of social and economic factors, some of which may have little apparent relation to marine mammals. The present plan is directly concerned only with the formulation of objectives.

4.5 Few Governments have established specific national policies for marine mammals, although some are in the process of attempting to do so. Administratively, most Governments will be faced with difficulties arising from the number of departments or agencies which may be involved. These may

include, for example, fisheries, environment, food, commerce, education, science, culture and tourism. Both industrial and public attitudes on many of the issues involved have been changing rapidly in recent years, and are likely to continue to do so.

4.6 The Bergen Consultation devoted some time to the examination of objectives and, in one approach, identified 20 possible objectives in socio-economically oriented, ecologically oriented and ethically oriented categories. It did not, however, proceed much beyond the stage of listing possible objectives, and its discussions of these questions were further restricted by the fact that the competence of the Consultation was almost entirely limited to the scientific field, and particularly to population biology, natural history, ecology and management science. A more comprehensive examination of objectives would need to take into account also the result of research in other scientific disciplines, as well as legal, social, economic, moral and ethical questions. Several other studies have been undertaken or are now in progress, which will provide material relevant to the formulation of objectives. These studies include those of the ACMRR Working Party on the Scientific Basis of Determining Management Measures, of IWC in revising its management procedure, and of various relevant activities in IUCN and the World Wildlife Fund. Account should also be taken of the policy outlined in the World Conservation Strategy with respect to the environment as a whole, to wildlife and to renewable natural resources including marine resources, and of such studies as have been made by governments in formulating national policies. Discussion and formulation of national legislations (e.g. Australia and the United States of America are also important in this context.

4.7 The process of developing a sound and comprehensive set of objectives for the conservation of marine mammals will probably be best approached in two stages; first, preparation of a background document assembling the basic information and concepts; secondly, preparation of a definitive document by a fairly small but widely representative working group, using the background document as a basis for its work. The scope of the questions to be examined even in the preparation of a background document is, however, so wide that, at the present stage, it is not easy to select the best mechanism for its production. The discussions and other activities which will take place during the first biennium of the Plan can be expected to draw out much information, particularly in the legal area, which will be relevant to the formulation of policy objectives. The planning and co-ordinating committee and other consultative groups will also be acquiring familiarity with the issues involved. It appears, therefore, that by the end of the first biennium of the Plan, it should be much easier to identify an appropriate mechanism for policy formulation.

Recommendation 2

It is therefore recommended that:

The activities to be implemented after the first biennium of the Plan should contain a proposal as to the means by which a review of relevant information, concepts and alternatives for global objectives for the

conservation of marine mammals would be undertaken. Part of this review should be the evaluation of the consequences these alternatives might have for the marine ecosystem and the rational utilization of its other (non-mammal) resources.

IV.2 Area of Concentration B - Regulatory and protective measures

4.8 In practice, the measures which can be taken toward achieving the conservation of marine mammals must be aimed at modifying human activities which can affect them. With very few exceptions, such as the re-establishment of extinct local populations by transplantation (e.g., the sea otter in western North America) these measures are negative, being directed toward limiting or prohibiting human activities which have adverse effects on the mammals. The major categories into which these possible measures fall are:

- Limitation or prohibition of harvesting animals for utilization of the carcasses;

- Restriction or prohibition of deliberate killing for other reasons (e.g., to prevent adverse effects on fishing operations);

- Prevention, as far as possible, of unnecessary or incidental killing;

- Protection from unnecessary disturbance (harassment);

- Protection from adverse environmental changes.

4.9 Taking conservation to include the utilization of marine mammals for the benefit of mankind implies the possibility of harvesting, provided that it is done in a manner which will not endanger long-term future options. Harvesting should then be permitted only under conditions which will enable stocks to be brought to and maintained at highly productive levels. Populations significantly below the "optimum" level as defined in Recommendation 1 this level should be subject either to complete protection or to a level of catch which will not seriously slow down the return to the optimum level.

4.10 These have been the underlying principles of the management procedures of IWC since 1975, and they have thus been applied to the conservation of large cetaceans as far as IWC has been able to do so. These problems, which arise from the application of these principles, fall mainly into two fairly distinct categories: the political and legal, and the scientific. Problems in the former category are discussed further under Area of Concentration C in relation to possible actions under the Plan. The extent of the scientific problems is being increasingly appreciated as knowledge grows and the nature of some of the uncertainties becomes more apparent. It has become evident that, for those stocks which neither are clearly in a badly depleted state, nor, on the other hand, have been subject to very little depletion, the critical question is not simply one of determining the status of a particular population and deciding on the appropriate action; it is generally that of deciding on the appropriate action when the status can only be determined within wide limits which themselves cannot be assessed with any accuracy. Possible actions under the Plan aimed at increasing ability to deal with these scientific problems are discussed further under Area of Concentration D.

4.11 Thus, for the large cetaceans, international mechanism does exist in the form of IWC, which has in recent years acnieved very substantial success in regulating expoitative catches, and which is working actively toward the solution of the legal-political and scientific problems discussed above. For very few other marine mammals, however, is international action of this kind being taken. Examples where it is are, the harp seals of the western North Atlantic, and the North Pacific fur seals. A number of other populations of small cetaceans, pinnipeds and sirenians are subject to exploitation for either commercial or subsistence purposes, but such controls over these operations as exist are at the national level, and probably vary greatly in their effectiveness as conservation measures. To provide a basis for efforts to ensure that good conservation practices are applied to all exploited marine mammal populations, an overall review is required of the nature and magnitude of harvesting operations on marine mammals in circumstances not already subject to international controls. Such a study would appropriately be undertaken by a consultant.

Recommendation 3

It is recommended that:

A consultant be engaged to undertake an overall review of the nature and magnitude of those harvesting operations on marine mammals which are not at present under international control, and of the form and effectiveness of any controls which are applied to them. FAO should be asked to take responsibility for such a study.

4.12 In those cases where marine mammals are killed deliberately but not for utilization of the carcasses the appropriate conservation measures should be based on knowledge, both of the state of the mammal populations and of the actual economic and social effects which they are having on the communities affected. While the principles discussed above regarding exploitative use should generally apply here also, there may be circumstances in which more severe local reduction of the mammals may be desirable, provided the major part of the population remains near the optimum level. Regulatory action in these matters is almost entirely at the national level and may be comparatively rare, except in those nations which have imposed complete protection on marine mammals in their waters. Cases such as the culling of grey seals in the United Kingdom, in which control operations are based on scientific study of the mammal populations, are probably still exceptional. It appears that because, due to their official nature, such operations tend to become widely known, they may attract more controversy than spasmodic shooting by fishermen which may still be quite extensive. This controversy can extend into the scientific basis for the operations. The nature of the general situation regarding the deliberate but non-utilizing killing of marine mammals is such that the information needed as a basis for future action would best be obtained initially by a nation-by-nation inquiry at the government level. This would best be undertaken as a secretariat task.

Recommendation 4

It is recommended that:

The co-operation of national Governments be sought in compiling data on the past and present numbers and kinds of marine mammals killed on account of the effects they are reported to have on fisheries operations, on the status of the marine mammal populations concerned, and on the reputed effects of the mammals on the yield and economics of the fisheries and to maintain these data for the future. FAO should be requested to undertake this task, either directly or in association with the proposed Plan Secretariat.

4.13 Incidental killing of marine mammals by definition does not convey any direct benefit on the fisherman or others responsible. Attempts to prevent such deaths may, however, produce costs in modifications to gear or in loss of efficiency. Effective action is already being taken to abate the greatest problem in this area, the killing of porpoises by tuna purse-seiners in the eastern tropical Pacific (para. 2.16). In general, the most immediate need is to obtain an overall review of the extent of the problem. Like deliberate but non-utilizing killing, incidental killing takes place mainly within fishing communities and on a local scale. The acquisition of information in this case also will, therefore, be best approached by a nation-by-nation inquiry at the Government level.

Recommendation 5

It is recommended that:

Further to Recommendation 4, Governments should be requested to provide information on the past and present numbers and kinds of marine mammals killed incidentally to other activities in their waters or by their nationals, and to maintain these data for the future. FAO should be requested also to undertake this task, either directly or in association with the proposed Plan Secretariat.

In carrying out this and the previous task, FAO should consult closely with the countries concerned. In addition, it should seek the assistance of IWC, NPFSC, the Inter-American Tropical Tuna Commission (I-ATTC), the International North Pacific Fisheries Commission (INPFC), the Northwest Atlantic Fisheries Organization (NAFO), the International Council for the Exploration of the Sea (ICES), IUCN, and other appropriate international bodies. In the first stage FAO, in consultation with ICES, should send inquiries to its field officers for collecting data which would provide some bases for a consultant study. This study might be followed by a small workshop to discuss the results.

4.14 It is equally important that catch data of the kinds discussed in the preceding sections should be stored in a manner which will enable it to be continually updated and also permit ready retrieval. As well as making the detailed data available on demand to appropriate scientists, provision should also be made for the regular publication of summary tables for general availability. The Bureau of International Whaling Statistics (BIWS) and FAO are already publishing annually some data on whale and marine mammal catches, respectively. Both series have, however, a number of deficiencies. It is to

be noted that from June 1984, IWC will take over the statistical work performed by BIWS. In addition, IWC is currently setting up a computerized data system to incorporate as much data as possible on catches of at least large whales. No plans for regular publication of summary data have yet been announced. The collection and the publication of data on marine mammals by FAO, IWC and other organizations should be co-ordinated by FAO so as to avoid duplication of effort.

Recommendation 6

It is therefore recommended that:

(a) FAO include the necessary information about whaling and sealing and, if possible, the hunting of sirenians in its statistical system for fisheries as well as covering the harvest of important prey species such as krill;

(b) IWC, in consultation with FAO, arrange for the completion and publication of the historical series of whale catch data which was presented in incomplete form to the Bergen Consultation;

(c) FAO, UNEP, IWC, IUCN and SCAR agree on arrangements for the regular compilation, summarizing and publication of data on commercial, subsistence and incidental catches as well as data on important prey species and their utilization, either through issuance of joint bulletins or by dividing the task among several organizations.

4.15 Statistics of production of and international trade in commodities derived from marine mammals are very incomplete and not systematically compiled. The principal bodies concerned with such data are the secretariat of CITES and the international bodies dealing with trade statistics such as the Customs Co-operation Council and the Nomenclature of Foods for the External Trade Statistics of the European Economic Community (NIMEXEI) and the IUCN World Trade Monitoring Unit (WIMU). With regard to the species listed in the Appendixes to CITES, the Governments concerned should comply with the IWC resolutions on trade in whale products. FAO could contact the countries known to be engaged in whale meat trade and publish the data obtained in the Yearbook of Fishery Statistics.

Recommendation 7

It is recommended that:

IUCN, in co-operation with the secretariat of CITES, prepare a detailed proposal for improvements in the collection and publication of statistics on the production of and international trade in products derived from marine mammals. This proposal should be transmitted to FAO for consideration and implementation.

4.16 The protection of marine mammals from unnecessary disturbance is essentially a problem of the inshore waters. It is, therefore, primarily a national concern and, since the activities it is desired to control are often

directed essentially toward marine mammals, remedial action can often be appropriately taken under marine mammal legislation. At the present time, the principal action required is probably a review of the legislative situation as proposed in a later section of the Plan.

4.17 Three other aspects of man-induced environment changes which may adversely affect marine mammals can be identified:

(a) Pollution, by the introduction of harmful substances and objects into the oceans. Remedial actions will probably have to take place as part of a general drive against marine pollution; the chief requirement for the marine mammals is to ensure that information concerning the adverse effects of pollution is as comprehensive as possible, and is taken into account in determining priorities within wider programmes. It may be noted that, although the heavy metals which occur in marine mammals may affect utilization, they are mainly of natural origin and therefore do not strictly constitute part of the pollution control problem.

ACMRR pointed out the need for continuing arrangements for compiling and reviewing information about biocides, heavy metals and other contaminants in the tissues of marine mammals, and about their effects. There is a clear need to maintain and improve monitoring of the occurrence of contaminants in marine mammals. Some such data available through the "Inventory of Data on Contaminants in Aquatic Organisms", which is part of the INFOTERRA system, are believed to be in suspense.

Recommendation 8

It is recommended that:

UNEP and FAO: (a) commission a consultant study and review of what is known about the contamination of marine mammals; (b) arrange for the Inventory of Data on Contaminants to be kept up to date and improved in its coverage of studies of marine mammals and consider its expansion to include, where practicable, summaries of the data themselves as well as the locations of data; (c) invite ICES and IOC to co-operate in the preparation of a review of information on the occurrence of contaminants in the tissues of marine mammals, on the effects on the mammals and on deaths or injuries to marine mammals presumed to be caused by contaminants.

(b) Impact on breeding areas, through development of coastal zones for industrial and other purposes. Control of these highly localized, although important effects are intrinsically a matter for national governments. While the spreading practice of requiring environmental impact statements prior to the approval of major projects is a hopeful feature as far as industrial or residential development is concerned, it will be essential to ensure that possible effects on marine mammals are properly identified and presented where they are significant.

Recommendation 9

It is recommended that:

UNEP and FAO arrange for a consultant study of the effects of man-induced environmental changes on marine mammal populations with the aims of:

(a) Identifying those populations at greatest risk from this cause;

(b) Assessing the nature and probable future trends of the most important causes of such risks.

(c) Impact on food supplies. The greatest immediate cause for concern relates to the possible effects of the developing krill fishery in the Southern Ocean. The objective of the Convention on the Conservation of Antarctic Marine Living Resources is the conservation of all Antarctic marine living resources. Among the principles of conservation to be followed are the maintenance of the ecological relationships between harvested, dependent and related populations and the restoration of depleted populations. Thus one of the major problems facing the Commission may be that of fixing catch limits, closed areas, and other measures for the regulation of krill fishery. This involves taking account of the effects of that fishery upon the whale and seal populations and specifically upon the recovery of those that are depleted. Although the responsibility for fixing catch limits for krill obviously rests with the Commission, it may be useful that other bodies with scientific or conservation interests in the Southern Ocean be ready to give any appropriate scientific and technical advice when specific requests for co-operation are made by the Commission under article 23 of the Convention.

Considerable discussion and study of the Southern Ocean ecosystem and the problems of developing a satisfactory management regime for it have taken place in the last few years, particularly under the auspices of IUCN in association with the BIOMASS project sponsored by SCAR/SCOR/ACMRR.

Recommendation 10

It is recommended that:

Relevant specialized agencies and bodies of the United Nations, including FAO and other intergovernmental and non-governmental organizations concerned, should give appropriate advice when specific requests for co-operation are made by the Commission for the Conservation of Antarctic Marine Living Resources under Article 23 of the 1980 Convention.

4.18 It is very possible that reduction of food supplies by expanding fishing operations constitutes the most widespread threat to the recovery of depleted marine mammal stock which are now effectively protected. As a first step to understanding of the nature and extent of these threats,

Recommendation 11

It is recommended that:

FAO should examine the effects on marine mammal populations of recently expanding fisheries directed toward their food supplies, paying particular attention to the effects of the demersal fishery in the Bering Sea and the capelin fishery in the Northwest Atlantic.

4.19 The preceding paragraphs have listed a number of kinds of situations in which the survival of marine mammal populations may be threatened, and have cited a number of examples. Other similar situations are discussed in appendix 1. An important feature of the Plan should be a strong effort to take urgent remedial action in as many of these cases as possible. Many of these situations lie within the jurisdictions of individual Governments. In these circumstances the appropriate action is to draw the Government's attention to the situation, pointing out the kind of action required. This may be sufficient in some instances, but it may be desirable also to offer technical advice and assistance or even financial aid. For example, in view of the concern felt for the gray whales on account of the possible adverse effects on this newly-recovered stock of industrial and other development in the Mexican coastal lagoons in which it breeds, the action of the Mexican Government in establishing refuges in some of these lakes and in initiating a research programme should be commended. Means should be sought to provide assistance, both financial and scientific, to it in the development of protective measures aimed at ensuring that the productivities of the lagoons concerned as breeding grounds for gray whales are not impaired.

Recommendation 12

It is recommended that:

(a) The ad hoc planning and co-ordinating committee, in consultation with the ad hoc advisory committee of scientists, seek to identify cases in which specific protective measures should be taken by individual Governments or groups of Governments to enhance the chance of survival of threatened marine mammal populations;

(b) UNEP and FAO, in consultation with IUCN and other appropriate bodies, provide upon request technical advice to such governments to take whatever legal or administrative steps may be necessary and, if required, seek sources for such technical and financial aid as may be needed.

4.20 As with terrestrial wildlife and ecosystems, the conflicts in human use and attitudes arising from the diversity of values of marine mammals, cannot be entirely resolved by compromise. Nor can harmony among human groups, the well-being of the animals and the health of the ecosystems they inhabit be secured solely by agreement in each locality, or even in each region. It is universally recognized now that conservation actions on land must include the setting aside of substantial conservation areas where consumptive uses are severely restricted, or even eliminated. Such areas, whether they be called

parks, reserves or sanctuaries, are subject to management plans which commonly include scientific research, and which are designed to ensure the maintenance of the ecosystems, habitats and species within them. The same principles are now being applied in certain regions to coastal zones and marine areas. Conservation areas should be kept to the size necessary from an ecological standpoint and their creation should not unduly obstruct the rational utilization of fishery resources or of the population in question. A worldwide network of marine and coastal reserves and parks would contribute much to the conservation of marine mammals. Such a network, as at present conceived, does not however include the offshore and high-seas areas which are inhabited by many of the marine mammals, particularly the large and migratory species, and therefore additional measures appear to be necessary.

4.21 IUCN has recently reviewed the problem with respect to conservation areas for cetaceans. Its recommendations may generally be taken as an important contribution to the Plan of Action in this area.

Recommendation 13

It is recommended that:

IUCN review the question of conservation areas for pinnipeds in a similar manner to the review for cetaceans, and formulate recommendations for action.

4.22 IUCN recommended that consideration be given to the establishment of large ocean "sanctuaries" - at least one in each ocean region - for large whales and, incidentally, other cetaceans. The south-eastern Indian Ocean was suggested as the first such conservation area, subject to further examination of the biological and political implications.

4.23 In July 1979 IWC declared the entire Indian Ocean south to 55° S latitude as a "sanctuary" in the terms of Article V (I) (c) of the International Convention on Whaling. A condition of this agreement was that an appropriate research programme should be established in the area. In 1979 IWC also adopted a moratorium on whaling by factory ships except for the taking of minke whales. As a result of these actions, the high seas of all the oceans except the Antarctic are, in practice, now sanctuaries for all large cetaceans. In 1982 the Commission decided that catch limits for the killing for commercial purposes of whales from all stocks for the 1986 coastal and the 1985/86 pelagic seasons and thereafter shall be zero. This provision will be kept under review, based upon the best scientific advice and, by 1990 at the latest, the Commission will undertake a comprehensive assessment of the effects of this decision on whale stocks and consider modification of this provision and the establishment of other catch limits.

4.24 A number of countries have declared that marine mammals are fully protected within their EEZ or exclusive fishing zone. This is the case, for example, in the south-west Pacific (Australia, New Zealand), North Pacific (United States of America), North Atlantic (United Kingdom, United States of America) and Indian Ocean (Seychelles). Other States are known to be considering such measures in sea areas under their jurisdiction.

4.25 There is thus emerging a new pattern of protection of the large marine mammals. Within the EEZs, to which many species of marine mammals are confined, full authority for any actions can exist in national legislation, and a major remaining problem may be the development of consistent actions among neighbouring States whose waters have overlapping populations. Outside the EEZs the only existing authority which can at present declare protected areas is IWC, and its authority is limited to its Member Nations and to the large cetaceans. National Governments have the power, as Australia has done, to prohibit the killing by their nationals of any marine mammals anywhere in the ocean. There is, however, no existing authority for the designation of areas of the high seas in which all marine mammals are protected against operations by the nationals of all countries.

4.26 The distinction between the kinds of protection which can be provided in a marine park and in a high-seas area also requires consideration. In coastal marine parks, as established in some countries, full protection of the environment, as in terrestrial parks, may sometimes be attempted, and this could embrace the full environment of any marine mammals concerned. Such a situation is not practicable in the high-seas areas, but there is need to examine what degree of environmental protection is desirable or practicable in association with the protection of the mammals. Such activities as surface transportation, overflight, pollution and particularly fisheries for other resources require close examination, both as to their effects and as to the possibilities of any limitation on them.

4.27 The purpose of protected areas also needs to be considered in relation to the concept of conservation as including rational exploitation. Terrestrial parks dedicated to the protection of particular species or groups are generally directed toward providing an area which covers the normal range of a representative sub-population, and within which the animals can live in an unmodified environment and be protected from human predation (except perhaps for necessary culling). This implies that there may be other areas in which the species may be exploited in a responsible manner.

4.28 The situation discussed above can be seen to have changed rapidly in the last few years, and is likely to continue to do so. There is, therefore, urgent need to ensure that such actions as are taken are well co-ordinated and that the general principles involved are worked out. The legal aspects are discussed further in a later section (IV.4).

Recommendation 14

It is recommended that:

UNEP, in co-operation with IUCN, IWC and FAO, support any initiatives taken by national Governments, individually or jointly, toward the development of objectives and practices of conservation area management at least in their own regions, and initiate any appropriate actions.

4.29 In addition, several specific matters on which action could be taken as part of this plan may be identified.

Recommendation 15

It is therefore recommended that:

(a) IUCN, in association with UNEP, initiate actions based on the proposals of the IUCN/UNEP/WWF Workshop on Cetacean Sanctuaries held in Mexico in 1979, as they may be further developed by the competent organs of IUCN, including: (i) preparation of lists of proposed sanctuaries; (ii) public awareness activities.

(b) UNEP, IUCN and IWC explore the possibilities of including certain areas beyond national jurisdictions within conservation areas;

(c) UNEP make the necessary approaches to intergovernmental bodies, both within and outside the United Nations system, as will be called for in implementing the Plan of Action for marine areas outside national jurisdiction.

4.30 It was also noted during the above mentioned Workshop that consideration should be given to the possibility of making some sanctuaries, once declared, virtually permanent. This need arises from the fact that the very success of sanctuaries in encouraging relatively high concentrations of animals, especially of populations recovering from previous depletion, can create an interest in their consumptive economic exploitation which will be hard to resist. There is also a need for a study of the conservation implications of legislation for the special protection of marine mammals within EEZs, and particularly of the enactment of similar laws or regulations by groups of neighbouring States whose zones of national jurisdiction form together a virtually continuous region of control.

4.31 The above discussion of conservation areas has been couched in terms of protecting marine mammal populations in designated localities from specific threats. There is, however, another aspect of this discussion which was raised at the Bergen Consultation and subsequently in other forums, including IWC and IUCN. This is the likelihood that protection of a species in one area will, provided it is accompanied by a suitable research programme, give information which will be valuable for the development of rational exploitation of that or related species in other areas. This possibility of a form of experimental management should not be overlooked in determination of management plans, even though it may call for some controlled hunting within the conservation area or some part of it in order to obtain scientific data to compare in some respects the protected and exploited populations. Similar considerations as to the possibility of scientific sampling of protected populations apply, of course, to the conservation of those pinnipeds which are harvested commercially and, perhaps, ultimately to the sirenians.

Recommendation 16

It is recommended that:

FAO, in co-operation with UNEP, IWC and IUCN, stimulate discussion of the advantages and disadvantages of controlled scientific sampling of protected stocks or in protected areas, and the conditions under which it should be permitted.

4.32 The preceding paragraphs of this section, although dealing with general issues, have been prepared with cetaceans and pinnipeds particularly in mind, but further reference should be made to the sirenians. Although many cetacean and pinniped populations are depleted, some to a very severe degree, they are mostly the subject of relatively stringent protective regulations. On the other hand, many, although not all, sirenian populations are subject to much more serious threats of extinction, and often have very little effective protection. They are, because of their life patterns, extremely vulnerable to human activities of many kinds. At the same time, rather little is known about them. They are less easy to census than seals, although easier than most whales, and they have been studied by few people. Although they are listed in appendices of several conventions, there are as yet no effective international agreements for their protection; there are no reserves for them, and such national laws as exist are mostly poorly enforced. Effective action with respect to all species is, therefore, very urgent.

4.33 The World Conservation Strategy has defined shared resources as ecosystems and species shared by two or more States, including species that move between one national jurisdiction and another, and ecosystems and species that depend on or are affected by events in another. They include ecosystems and species of international river basins and many coastal ecosystems and associated fisheries; and they also include migratory species. Many marine mammals fall within this definition. A number of international conventions have already been concluded as a framework for the management of migratory species (e.g., several regional agreements, the 1946 International Convention on Whaling and the 1979 Convention on the Conservation of Migratory Species of Wild Animals. In order to assist states to ensure that shared resources are properly managed, increased scientific knowledge is needed of the biological principles involved. Considerable attention is being given to these studies at the present time; an active role being taken by FAO.

Recommendation 17

It is recommended that:

UNEP, FAO and the secretariat of CMSWA urge Governments concerned to identify the marine mammal resources which they share with other States and enter into bilateral or multilateral negotiations, as appropriate, to ensure that these resources are properly managed.

IV.3 Area of Concentration C - Improvement of Scientific Knowledge

4.34 A number of broad international programmes of research relating to marine mammals have been proposed. The most comprehensive is that drawn up by the ACMRR Working Party and published in August 1977. Although this was a synthesis of detailed proposals made over the period 1974-1976, this document may even now serve as a guide to future action. Some indicated priorities will, however, have changed in the meantime; some of these result from problems encountered in the past few years by IWC in the implementation of its new management policy, others from similar problems encountered by other international and national regulatory agencies. Some of the activities

proposed by ACMRR have been implemented. Other suggestions have been assimilated in sectoral programmes, such as the International Decade of Cetacean Research (IDCR) sponsored by IWC. However, because of the specific terms of reference given to the ACMRR Working Party and to the Scientific Consultation in Bergen, the research programme does not cover all the areas of scientific research which are relevant to the understanding of the nature of marine mammals, as discussed in chapter II of this Plan, and to the formulation of appropriate policies and of effective strategies for their conservation. Such neglected areas include studies, in captivity and in the wild, of behaviour and communication and of marine adaptations. In these areas also international co-operation is highly desirable.

4.35 The Marine Programme launched in 1976 by IUCN/WWF included a considerable number of "Action Priorities" and projects concerning marine mammals. Many of these derive directly from the research proposals emerging from the Bergen Consultation, which were taken up by subsidiary bodies of IUCN. In most of these projects elements of scientific research are mixed with conservation actions, including public information.

4.36 ACMRR presented its proposals for research on marine mammals in three categories:

(a) Species and population studies (including taxonomic work, which is still necessary);

(b) Ecosystem studies;

(c) Conservation and management studies.

A revised and consolidated programme could retain these categories. In addition, studies directly related to the conservation of marine mammals are needed in the fields of:

(d) Research required for the implementation of law regarding international trade in marine mammal products and regulations concerning humane killing, live transport and welfare in captivity;

(e) Socio-economic and anthropological studies of the economic and nutritional values of marine mammals and of their contribution to the welfare of local human communities.

Less related to the development of improved conservation policies and procedures, but relevant to the scientific values of marine mammals would be:

(f) Studies of adaptations to marine life and other special characteristics.

4.37 There will be a need in arranging implementation of the Plan for scientific advice with respect to updating existing programmes, co-ordinating various sectoral activities, formulating new activities under (d), (e) and (f) of paragraph 4.36 and priorities for the allocation of international funds.

4.38 This advice would best be provided by an ad hoc advisory committee of scientists. This should be small, with not more than about eight members and consisting of individuals expert in a wide range of the scientific disciplines involved in the Plan and selected on the advice of appropriate international bodies. To provide the committee with broader scientific links, it might be set up as a working party of ACMRR.

Recommendation 18

It is recommended that:

FAO and UNEP jointly set up an ad hoc advisory committee of scientists for the Plan consisting of not more than eight members expert in a wide range of scientific disciplines and selected on their personal qualifications. In setting up this committee, FAO and UNEP should seek advice from competent international organizations. This committee should act as an advisory body to the ad hoc planning and co-ordination committee on all scientific aspects of the Plan.

4.39 The ad hoc advisory committee of scientists should be required to prepare a comprehensive document, with priorities identified and costs and means of research specified as far as possible. In so doing, the committee should take due account of certain trends and priorities which have been identified. These include:

(a) Continuation of studies of population dynamics; this should give particular attention to the relation of marine mammals to and their effects on other elements of the ecosystem. This is in accordance with the view expressed by ACMRR at its ninth session in 1978. Concern with the need for better understanding of interactions between species is also reflected in the ACMRR advice on the Scientific Basis of Determining Management Measures and on the Living Resources of the Southern Ocean;

(b) The need to ensure that biological materials and data obtained from capture industries are fully utilized. At one time a very large amount of certain kinds of material (e.g., sperm whale teeth) had been accumulated but had not been worked up. More recently much has been done to clear this back-log. Some accumulation still remains and there is need for watchfulness to ensure that such a situation does not develop again. However, the recent great reduction in whale catches should provide an opportunity to further reduce any remaining accumulations.

(c) It has been claimed that a great deal more study of live animals is required, especially in the wild, as opposed to the research based on examinations of carcasses. It is true that there are some areas of knowledge, largely neglected until quite recently, for which information can only be gained by study of living animals. It is equally true that there are other areas in which it will be difficult, if not impossible, to obtain from study of live animals the information traditionally obtained from dead animals, usually those taken in industrial catches. This applies particularly to the study of the age and reproductive structure of populations; information which is of importance in relation to the reaction of populations to exploitation

and protection. Study of live animals is indispensible to increasing knowledge of behaviour and communication. Both observations and data associated with commercial hunting and special scientific observations can contribute to knowledge of distribution and migration, as well as to estimation of population sizes. At the present time the Scientific Committee of IWC is placing increasing reliance in its population estimates on property organized sighting surveys conducted in association with catching operations, in place of the traditional catch-per-unit effort techniques. Recently techniques involving the recognition of individual animals from colour patterns, scars, etc., have been effective in tracking migrations and determining the size and structure of small population groups. Research on living animals calls for advanced instrumentation and special facilities for work at sea and in laboratories. This kind of research is very expensive and its efficient prosecution would call for close international co-operation. A prime need is for surveys of whales and dolphins in the open oceans, from both surface craft and aircraft. But there are also opportunities for less expensive studies on living whales at sea using sailing craft and other platforms of opportunity. However, if we are to hope to understand the lives of these creatures better it will be necessary to study them more directly in their own environment, using various submergence systems and also to make individual contact with them in captive or semi-captive conditions. After initial studies with some seals and small dolphins, such work is tentatively beginning with middle-sized animals such as the killer whale. Such investigations might ultimately be extended to the larger species, such as the sperm and bottlenose whales, and at least to the smaller and still fairly abundant species of baleen whales.

Under category (f) of paragraph 4.36 progress in the investigation of environmental sensing by, and inter-specific and intra-specific communication involving, marine mammals, especially cetaceans, should be carefully appraised, since its results have potentially an important bearing on policy objectives and on the directions of future research in other fields.

Exchange of information regarding research

4.40 When the ACMRR Working Party examined this matter (see its Recommendation 9), it concluded that the existing FAO services did not adequately serve the needs of those interested in research on marine mammals and their habitats, and in their conservation. Since that time the FAO service has been reorganized with the introduction of the Aquatic Sciences and Fisheries Information Service (ASFIS), and a few other bibliographic services and directories have been produced by national agencies and private organizations with special coverage of marine mammals research. These have not yet been evaluated as to their comprehensiveness and international value, and it is not clear how adequately they meet the needs of marine mammals research and conservation as seen in this Plan.

Recommendation 19

It is recommended that:

(a) FAO and UNEP examine the present and proposed coverage of existing information systems and make specific proposals for improving and co-ordinating them, or for a special new system if this seems desirable. In this task, account should be taken of the possibilities provided both by ASFIS and by INFOTERRA;

(b) Consultations be held with IOC(IODE/MEDI) as to whether the WDCs can participate usefully in the storage and retrieval of data relevant to the conservation of marine mammals.

Training for research

4.41 In its Recommendation 8, ACMRR pointed out that implementation of a programme of research and information gathering such as that required by this Plan of Action would require more specialists than were then available. It is, therefore, essential that a training programme be initiated to interest young graduates in biology and other relevant sciences in the marine mammals, and to provide them with the basic skills for recognition of species and for investigation of their natural history and ecology. Because of the wide distribution of many types of marine mammals and the similarity of habitats of particular forms on different continents, it would be reasonable to arrange such training largely through fellowships, to be taken up at designated centres, and on research/survey vessels on which work on marine mammals is a priority topic. Such a programme should be begun as soon as possible, continued intensively through the initial phase of implementation of this Plan of Action, and continued thereafter at a steady but lower level. There is also a need for an increased number of specialists in population dynamics and perhaps in other disciplines to study marine mammals, although the workers ultimately required will be fewer than for field naturalists. These increases in the numbers of scientists working on marine mammals might best be achieved by encouraging scientists already versed in these skills in their application to fisheries, agriculture or wildlife management to turn their attention to the problems of marine mammal conservation, and by providing them with opportunities to work in these fields. Such needs are not limited to developing countries. To these ends,

Recommendation 20

It is recommended that:

(a) UNEP and UNESCO/IOC, in co-operation with non-governmental sources of funds, seek to make available a number of fellowships each year for tenure up to two years, for specialized training at designated institutions and on vessels;

(b) National research organizations, both public and private, arrange to accept fellows from their own and foreign countries under conditions to be determined;

(c) UNEP and UNESCO co-operate, with the assistance of FAO, in establishing a short list of research and educational institutes (including research vessels) prepared to accept fellows and to which assistance might be provided in dealing with the instructional load thereby imporsed; NGOs with special interest in training facilities (e.g., IOI) be asked to assist in this task.

(d) International and regional organizations concerned assist in identifying specific training needs;

(e) Governments make provision for employment of those trained as marine mammal specialists through this programme in their service, or support their employment in universities or research institutions;

(f) National agencies and international organizations make available funds to permit experienced scientists to make advisory visits to localities in other countries where research activities are just beginning, and particularly to which fellows who have received initial training are returning.

Public participation in research and conservation actions

4.42 Traditionally much information, especially about the identity and distribution of small cetaceans, has come from strandings. Stranded animals may be reported by members of the general public, by coastguards and others. Where a continuing system of notification has been developed, this has permitted available specialists quickly to visit the locality, identify the animal and collect biological materials. As specialists are working in more and more countries and as communications improve, the possibilities for setting up such systems are becoming much greater. While the chances of survival of stranded animals are very low, and seem likely to remain so, some research programmes are being developed, particularly by veterinary scientists, to try to develop means of saving them. Public participation - preferably by organized groups, as in Australia - is an essential requirement for the development of such programmes, both in locating stranded animals and in applying experimental techniques for their recovery. In addition to problems relating to strandings, however, it is evident that in a few countries there is a growing interest in direct public participation in programmes of investigation, as well as of conservation. It could be of interest to take advantage of certain groups such as seamen and yachsmen, lighthouse-keepers and coastguards, oil-rig workers, crews of airlines operating between small islands and coastal dwellers to obtain information concerning marine mammals.

Recommendation 21

Accordingly, it is recommended that:

(a) UNEP and IUCN, upon request, should provide assistance to any interested Government in setting up systems for public participation in marine mammal observations. This assistance could include advice concerning log-books, identifying charts, communication arrangements and so on;

(b) An appropriate body undertake to compile an inventory of existing arrangements;

(c) UNEP, in consultation with IUCN, arrange for a small group of experts nominated by Governments to be assigned the task of preparing proposals for the development of world and regional networks of such activities.

Independent monitoring of management-oriented research

4.43 Most intergovernmental organizations and national authorities concerned have developed arrangements for the formulation of scientific advice regarding their conservation and regulatory responsibilities. It has, however, been frequently helpful for such advice to be supplemented by independent analyses and research projects which, by bringing fresh points of view or other ranges of expertise to bear, are able to modify or confirm the conclusions of the "in-house" studies. This was recognized by IWC in 1960 when it arranged for an assessment of the Antarctic baleen whale stocks by three scientists who had not been associated with its work, and were specifically not drawn from countries involved in Antarctic whaling. More recent examples of such actions have been the contributions in different ways by FAO and IUCN to the scientific work of IWC, and reviews by IUCN and other bodies of analyses of seal populations which are the primary responsibility of national or regional authorities. It is important that such independent monitoring should be encouraged and made possible, and more effective, through improved access to relevant data and broader opportunities to participate in scientific discussions. It is important also that it should not be institutionalized to the extent of being channelled only through a limited number of bodies. Nevertheless, it is noted that the IUCN/SSC Committee on Marine Mammals has a monitoring function explicitly among its terms of reference.

Recommendation 22

It is recommended that:

FAO, UNESCO/IOC, UNEP and IUCN, as the principal members of ECG, co-operate in stimulating, as widely as possible, independent studies of the scientific bases on which conservation measures taken by national or international authorities are founded or should be founded, and in seeking the necessary scientific and financial support for such activities.

Funding for research

4.44 Implementation of the above proposals will require substantial funds even in the planning phase. Since such a fund would not be concerned only with research, further consideration is deferred to chapter VI. However, it should be noted that even in the period since the Bergen Consultation private organizations and foundations, especially those with a particular interest in environmental matters, have become more inclined to contribute funds to research. Further, the addition of categories (d), (e) and (f) to the research programme would be expected to open up quite different sources of private funds, as well as being of interest to Governments not much concerned with the biological aspects of conserving marine mammals.

IV.4 Area of Concentration D - Improvement of law and its application

4.45 Many national laws and a substantial body of international law and instruments are directly or indirectly relevant to the conservation of marine mammals and their environment. In addition to the direct prohibition or regulation of killing or harassing marine mammals, the range of these laws includes the following: marine and fresh-water pollution; international trade and transit of animals; protection of wildlife; animal welfare; management of fisheries; establishment of conservation areas; the law of the sea as established both by global and regional conventions; migratory species; management of coastal zones and river systems; establishment of marine parks or sanctuaries. This list is not exhaustive. Especially in the last decade or so there has developed a growing body of law pertaining specifically to marine mammals. Internationally, in addition to the inclusion of particular species in lists to which provisions of more general conventions - such as CITES and the Convention on the Conservation of Migratory Species of Wild Animals (CMSWA) - apply, international fisheries conventions have been amended and regulations enacted under them to provide for special attention to marine mammals. The INPFC and I-ATTC are examples; both concern protection of dolphins. Nationally, legislation in several countries now assigns to marine mammals, or to some of them a special legal status under which they are regarded as different in some respects from fish.

4.46 The special status of marine mammals is also recognized in the United Nations Convention on the Law of the Sea, which provides that the coastal States and the competent international organizations have the right to regulate the exploitation of marine mammals more strictly than that provided for other marine living resources in the Convention (see the full texts of articles 65 and 120 of the Convention in appendix 6). Special provisions for co-operation and working through appropriate international organizations are also applied to marine mammals.

4.47 Some relevant new regional conventions have recently been negotiated (e.g. CCAMLR and that establishing the South Pacific Forum Fisheries Agency) and other existing conventions have been or are being reviewed. Of particular importance in this respect is the discussion regarding the possible revision of the International Convention on Whaling (1946). It is important to ensure that new international agreements and national laws make effective provision for the conservation of marine mammals, taking account of present scientific knowledge and of trends of policy and opinion with respect to marine mammals.

4.48 Existing laws and agreements are not fully effective, and in some cases quite ineffective. One reason is that not all appropriate States are parties to the relevant international conventions, although all States currently engaged in whaling are members of IWC. The responsibility for enforcement of the provisions of international agreements lies with the member nation within the areas under its jurisdiction. The first step is, therefore, the enactment of appropriate national legislation. FAO could assist countries in developing marine mammal legislation. Once national legislation has been enacted, there may be inadequacies in material provision for its enforcement. A State may, for example, appoint insufficient inspectors to enforce its own laws, or it may make inadequate administrative or fiscal arrangements to receive

internationally-appointed observers. There may also be technical reasons for weak application of law; an example of this is the lack of guides by which port authorities can identify products and hence implement trade regulations. Existing laws are sometimes ineffective because their existence is not known to the general public, or to officials or others who may be concerned. Correction of this is a necessary part of public awareness campaigns. Lastly, with respect to international agreements, reports of infringements duly made by one country may not be acted upon by the authorities of another country to which the transgressing personnel or vessels are subject.

4.49 In many instances, existing laws are enforced but the penalties for infringement of them do not deter transgressors; this problem, of course, concerns mainly national law but it arises also in connexion with international agreements and the national laws enacted to implement them.

4.50 A number of immediate actions can be identified, which could assist in strengthening the existing legal machinery for the conservation of marine mammals.

Recommendation 23

It is recommended that:

The United Nations and its specialized agencies, as appropriate:

(a) Urge Governments to seek to ensure that adequate provisions for the conservation of marine mammals are included in the instruments resulting from the adoption of the United Nations Convention on the Law of the Sea, and arrange that assistance is available to Governments and to international organizations, upon request, in their preparations to take action in this regard;

(b) Assist States, upon request, in preparing any actions which may be desirable and in accordance with existing international law and practice, for the conservation of marine mammals in waters under their jurisdictions or with respect to their nationals and to vessels flying their flags;

(c) Inform Governments of the advantages that their adherence to the relevant conventions would bring for the conservation of marine mammals, and encourage them to adhere to appropriate international agreements so as to bring them into effect or to make them more fully effective, as the case may be, and also encourage them to enact appropriate national legislation for implementing the commitments they thereby accept;

(d) Seek to ensure, through the organizations and secretariats concerned, that relevant marine mammals, especially threatened species, are included in lists annexed to the conventions or otherwise covered by them;

(e) Assist Governments, on their request, in the drafting of appropriate national legislation and regulations.

4.51 Where existing agreements have lapsed or are currently being renegotiated, it is important that opportunities be taken to ensure that the revised agreements, and the renewed organizations established under them, are able to serve the objectives of this Plan of Action. The guidelines provided for in the 1979 Convention on the Conservation of Migratory Species of Wild Animals (especially in its article V) should be taken into account.

Recommendation 24

Therefore it is recommended that:

FAO and UNEP, as appropriate:

(a) Should invite Governments concerned to act upon the opportunities to improve the conservation of marine mammals which may occur when new agreements are being negotiated;

(b) Invite the secretariats of the organizations concerned to draw the attention of their members of the need to take account of marine mammal problems;

(c) Seek to stimulate and co-ordinate the above actions, especially by drawing the attention of each organization concerned to actions taken or contemplated by the others.

The regional bodies established under the constitution of FAO, e.g., GFCM, the Indo-Pacific Fishery Commission (IPFC), the Indian Ocean Fisheries Commission (IOFC), the Committee for the Eastern Central Atlantic Fisheries (CECAF), the Western Central Atlantic Fishery Commission (WECAFC), have recently been restructured and given additional support in a manner which will make possible an increase in their effectiveness in approaching marine mammal problems.

4.52 Marine mammals conservation problems are important in both the regions where new agreements have recently been negotiated - the South Pacific and the Southern Ocean - but especially the latter. Enactment of these new agreements virtually completes coverage of the world ocean by fisheries management bodies. In the South Pacific the convention establishing the South Pacific Forum Fisheries Agency refers to the conservation and optimum utilization of the living marine resources of the region and particularly to the highly migratory species. It is not yet clear, however, to what extent marine mammals will be regarded as highly migratory species for this purpose.

Recommendation 25

It is therefore recommended that:

FAO and UNEP jointly seek to ensure that arrangements are made in the interim until the United Nations Convention on the Law of the Sea is in force so that as far as possisble the requirements for marine mammal conservation are met by informal co-operation between Governments and through existing regional and specialized organizations.

4.53 There are several ways in which partial or completely overlapping competence may arise between regional or specialized organizations for the conservation of living marine resources. Overlap may occur geographically in scope of interest or responsibility, or in national membership In addition, even where there is no overlap, the actions of one body or events in its region may affect actions or events in an adjacent region, especially where the marine population is mobile between the regions. IUCN has begun to study this matter, starting with the case of IWC and CCAMLR. In the latter case a number of other existing regional fisheries organizations, concerned with the tropical areas to which the southern hemisphere whales annually migrate, are also involved. Where overlapping organizations have a common interest in a specialized field such as marine mammals, their effectiveness will be increased if their policies and programmes are as mutually consistent and supportive as possible.

Recommendation 26

It is recommended that:

UNEP draw the attention of Governments and organizations concerned to the need for co-ordination with respect to marine mammal conservation between international organizations having overlapping interests, and identify the specific problems in each ocean area.

4.54 ACMRR has drawn attention (Recommendation 3) to the need for a continuing inventory of information sources about national legislation and international agreements and decisions which concern marine mammals directly, or the application of which may affect them or their habitats. Such an inventory should include, among other things, sources specifying regulations of harvest, other controls of resource use, measures for protection or regulation of use of critical habitats, rules concerning live capture, harasssment and maintenance in captivity for experimental purposes or for exhibition of live animals, and trade in products from dead ones. It is essential that such an inventory be drawn up after consultation with both the Governments and the intergovernmental organizations concerned. FAO could be the focal point for the storing of all the available legal information.

Recommendation 27

It is recommended that:

The secretariats of FAO, IWC, UNEP and IUCN consult together on an appropriate mechanism for establishing an inventory of sources of information concerning national legislation and international agreements which affect marine mammals and their habitats, directly or indirectly, and develop proposals for means by which it could be established and on the arrangement for co-operation in contributing to it and obtaining information from it.

4.55 Certain aspects of international law concerning acts both within and outside national jurisdiction which are relevant to the conservation of marine mammals have been pointed out by IUCN in a study of environmental questions relating to the law of the sea. These aspects include the creation of

reserves and sanctuaries in areas beyond national jurisdiction, the regulation of live capture, the control of possible harassment, and the elimination of wasteful incidental capture. For the successful conservation of several species of marine mammals it is desirable that some agreements be reached among nations on these matters. To this end,

Recommendation 28

It is recommended that:

(a) IUCN ensure, as follow-up to its project in co-operation with UNEP on cetacean sanctuaries, that the legal issues are explicitly considered, and that proposals for international agreement on these matters, through existing mechanisms or otherwise, are formulated and submitted to Governments for their consideration;

(b) IUCN, in co-operation with FAO, ensure that in any follow-up to its project on the incidental take of marine mammals in fisheries the legal issues are explicitly considered and proposals for international agreements, through existing mechanisms or otherwise, are formulated and submitted to Governments for their consideration;

(c) IUCN study legal problems relating to live capture and harassment, with a view to developing proposals for international agreements on these matters, through existing mechanisms or otherwise.

4.56 Many of the marine mammals are considered to be "migratory species" under the terms of international conventions being negotiated, and specifically in the Convention on Conservation of Migratory Species of Wild Animals (CMSWA), signed in 1979 and entered into force on 1 November 1983.

Recommendation 29

It is recommended that:

UNEP and IUCN, having supported the preparation of the Convention on the Conservation of Migratory Species of Wild Animals:

(a) Promote wide participation in and effective implementation of the convention;

(b) Arrange for the preparation of guidelines for the application of the Convention to marine mammals, taking into account the status that they as "highly migratory species" may be granted under the Convention on the Law of the Sea and under specific regional agreements, and make these guidelines available to interested Governments.

4.57 Governments party to the Convention concerning the Protection of the World Cultural and Natural Heritage may propose for inclusion in the World Heritage Lists "precisely delineated natural areas of outstanding universal value from the point of view of science, conservation ...", and "natural

features consisting of ... biological formations, or groups of such formations which are of outstanding universal value from the ... scientific point of view". Placing an area or a formation on the World Heritage Lists substantially enhances the obligation upon the State concerned and the international community to increase the preservation or conservation of whatever is listed; it also opens up opportunities for international assistance in carrying out any necessary work. Areas which might be of sufficient scientific or conservational importance with respect to marine mammals are:

(i) The breeding are of the southern right whale off the Valdez Peninsula, Argentina. This area is the site of the first intensive study of a local population, recovering under full protection, in which individual whales have been identified and measured and their presence followed in successive years, thus opening up new possibilities in the study of whale populations with minimal interference. An international study of this population, extended over several decades without disturbance, would be facilitated by recognition of the locality in the World Heritage Lists;

(ii) The Sea of Cortez (Gulf of California, Mexico) is a key area for the reproduction of gray whales and preservation of its environmental quality is essential to the continuing recovery of this unique population. It is also important to other marine mammals. The 1979 IUCN/UNEP/WWF Workshop on Cetacean Sanctuaries gave high priority to the designation of this area as a sanctuary. At the same time it was suggested that this area of wider interest from the point of view of marine mammal conservation and that the Sea, with its islands and coast, might qualify for designation on the World Heritage Lists.

There are a number of other areas whose inclusion in the World Heritage Lists would assist in the protection of threatened populations of marine mammals, particularly pinnipeds and sirenians. The ad hoc planning and co-ordinating committee, in consultation with the ad hoc advisory committee of scientists, should arrange for information about such areas to be accumulated and transmitted to UNESCO as soon as possible. The organizations associated with the Plan should then endeavour to have these areas added to the Lists.

Recommendation 30

It is recommended that:

UNEP, in co-operation with UNESCO:

(a) Invite Governments concerned to consider the inclusion in their nominations for the World Heritage Lists of: (i) the breeding area of the southern right whale off the Valdez Peninsula, Argentina; (ii) areas of the Sea of Cortez, Mexico, which are important to the conservation of gray whales;

(b) Consult with the ad hoc planning and co-ordinating committee and the ad hoc advisory committee of scientists to identify further areas where inclusion in the World Heritage Lists would aid the conservation of threatened populations of marine mammals;

(c) Urge the Governments in whose jurisdictions such areas lie to nominate them for inclusion in the Lists;

(d) Encourage any relevant State which has not yet adhered to the World Heritage Convention to do so.

4.58 Another mechanism which may be useful in establishing protected areas for marine mammals is that provided by the system of Biosphere Reserves being set up under the Man and the Biosphere programme (MAB) administered by UNESCO. This programme is of particular interest since it aims at setting up blocks of contiguous reserves such that an area, which is of particular importance and therefore given a high degree of protection, is surrounded by a buffer zone of areas given lower degrees of protection. The programme is also aimed at making the fullest possible use of existing national and international machinery for the establishment of reserves, rather than at setting up new legal or administrative machinery. This programme might be particularly useful to the conservation of marine mammals as a means of providing adequate protective systems for threatened populations which are centred upon small but vital breeding areas.

Recommendation 31

It is therefore recommended that:

UNESCO and UNEP consult on ways in which the need to provide improvement in the establishment of protected areas for marine mammals can be associated with the Biosphere Reserves system under the Man and the Biosphere Programme

4.59 The preceding paragraphs in this section have shown the diversity and complexity of the legal problems involved in establishing satisfactory and efficient mechanisms for the conservation of marine mammals both nationally and internationally. A number of immediate actions have been proposed to meet situations which can now be identified as important, or to promote study of them. The study of the legal matters impinging on national sovereignty should be carried out by, or in consultation with, the Governments concerned or by intergovernmental organizations. However, the complexity of the situation is such that there is a need for an in-depth study of the whole situation at a high level of technical competence. A valuable step in this direction was made at a privately organized study, supported by the Centre for Environmental Education (CEE), which was held in France in December 1979. This should be followed up by a carefully-prepared review of the whole field to be undertaken as a specific component of this Plan. Development of terms of reference and an agenda for this study would require careful consideration, and it would also be necessary to prepare background documents. Much useful information for this purpose would emerge from the activities proposed in the preceding paragraphs. The study should take the form of a workshop, and careful consideration would have to be given to the selection of the participants; in

order to ensure a well-balanced outcome from the workshop, it would be necessary that in addition to having a high level of technical competence the participants should be widely representative of the interests and points of view concerned with marine mammals. To enable sufficient time to be given to these preparations and to make available the results of the studies proposed in preceding paragraphs, it is suggested that activity in the first biennium of the Plan should be limited to development of the preparations for other workshop, and that firm proposals should be presented to the Review Meeting for the holding of the workshop early in the second biennium of the Plan. Development of these proposals should be undertaken by a small group - two or three - of experts retained for the purpose. Consideration should also be given to following up the workshop with a review of its report at a representative conference including, as appropriate, national Governments, intergovernmental organizations and NGOs.

Recommendation 32

It is recommended that:

(a) UNEP and FAO, in consultation with UNESCO and IUCN, set up a group of two or three experts to prepare proposals, for consideration at the Review Meeting, for a major workshop to make an in-depth study of the legal aspects of the conservation and management of marine mammals. The proposals should include the terms of reference and draft agenda of the workshop and specific recommendations as to the participants. The work of the group should also initiate making arrangements for the preparation of background documents;

(b) The Review Meeting should consider the above proposals with a view to holding the workshop as early as possible in the second biennium of the Plan;

(c) The Review Meeting also consider arrangements for the report of the workshop to be further examined at a representative meeting of national Governments, intergovernmental organizations and NGOs.

IV.5 Area of Concentration E - Enhancement of public understanding

4.60 Public understanding is vital to the achievement of the objectives of the Plan. The nature and depth of the information required by different groups varies. Legislators and administrators are responsible for the enactment and enforcement of legislation required for marine mammal conservation. It is important that information is available to them so that they may be aware of the identity of the urgent problems and of the appropriate actions to take. It is equally important that those involved in day-to-day activities such as local enforcement should have sufficient understanding to appreciate the need for conscientious and thoughtful discharge of their duties.

4.61 There is a special need to develop as much understanding as possible among groups associated with the destruction or harassment of marine mammals or with damage to their environment. These include not only those involved in whaling or sealing, but also those whose harmful activities may be incidental to their principal aim, such as fishermen who may kill seals or dolphins,

either accidentally or intentionally; it may also include the operators of whale-watching boats. In these cases it is important that the people concerned should be aware of the reasons for conserving marine mammals and any restrictions which may be imposed. It is particularly important in those cases where mammals are killed because they are believed to have adverse effects on fishing operations that the true extent of these adverse effects is known. ACMRR perceived that the fishing community in particular should be better informed, and in its Recommendation 12 proposed that "a short popular book on the subject of fishermen and marine mammals be prepared".

4.62 There are many reasons why the whole public regardless of special interest, should understand the needs for marine mammal conservation and management. Firstly, this is part of a general understanding of the environment in which mankind lives. Secondly, informed public opinion can help to promote conservation and management. The public can participate in appropriate research programmes and provide financial support for research and other activities.

4.63 Informed public opinion is one in possession of the essential correct information on the subject. It is, therefore, important that the information disseminated in any public information programme developed under the Plan should be as accurate and objective as possible. Unfortunately, at least some of the material which has been distributed in recent years, and has done much to build up the present widespread public interest in the conservation of marine mammals, has painted an exaggerated picture of the situation. As a result, many laymen are now convinced that "the whale" is in imminent danger of extinction and that unless certain countries are brought to abide by the regulations, its days are numbered. While such extreme portrayals of the situation have done much to build up the level of public awareness which has brought about recent improvements in the situation of marine mammals, it is likely in the end to be self-defeating, and more reliable progress will be made by making the information to be spread as accurate as possible. In some cases reliable information may not be available on an issue about which it is desired to inform the public, and then a special investigation may be necessary. Where a consensus among specialists cannot be achieved because of lack of, or uncertainties in, information, the differences should be reflected in the information materials and their consequences made clear. There is also a need for some governmental authorities and intergovernmental organizations to improve the flow of information regarding their actions, whether these be decisions such as setting catch quotas, authorizing the taking of animals for scientific purposes, or culling what are judged to be excessive numbers of animals in protected areas.

4.64 The nature of public understanding campaigns from one country to another because of differences in their domestic circumstances. The issues in such campaigns fall into two categories: those concerned with broad national or international policy, and those directed toward remedying local situations in which marine mammals are threatened. In most developed countries there is already awareness and concern for the depleted state of whale populations. The need may now be for a broader concern for marine mammals and for more greater information on the local values of marine mammals, e.g., in their

importance to coastal ecosystems and usefulness to coastal communities. In other countries there may be little opportunity for, or indeed value in, such general campaigns. However, in these countries and particularly some developing countries, the need for specific programmes aimed at local problems may be even greater than in the more affluent States.

4.65 Various media could be employed in the campaigns described above. All material needs to be tailored to particular local situations, and particularly to be sensitive to cultural factors. The book proposed in paragraph 4.61 could be addressed to fisheries administrators as well as fishermen. Besides this book, it would be useful if a series of booklets was to be produced, dealing with different marine mammals groups in accordance with local and regional interests. In this matter, non-governmental organizations, both national and international, can play a very important role. They should be encouraged and, where necessary, assisted to do so.

4.66 Central files of photographs, sound recordings, video-tapes, charts, film-strips and movie footage would also be very useful. Besides voluntary organizations which have experience in this field there are companies, film units, publishers and other entities in possession of relevant materials, and having wide experience in their production, who should be encouraged to contribute.

4.67 UNEP and IUCN have already wide experience in public awareness campaigns in relation to environmental matters. They could take the leading roles in the further development of a marine mammal campaign under the Plan. Several NGOs are already active in the public information field. Their materials should be made more widely available. This is an area in which NGOs, with the help and encouragement of UNEP, could take major responsibility.

4.68 The younger generation stands to benefit from conserving and managing marine mammals. It would be useful if special activities directed to children were broadened, spread to other countries, and assisted by governmental and intergovernmental agencies, particularly UNESCO. UNEP and UNESCO could sponsor the preparation of booklets, etc., giving guidelines and basic information in the national languages emphasizing local problems.

4.69 Because of the importance of public awareness to promote improved conservation and management of marine mammals, it would be appropriate to include in the initial phase of the plan a major study of the ways in which campaigns to increase public understanding can be co-ordinated, and also made more effective. This could be stimulated by holding an international workshop on the question as one of the components in the first biennium of the Plan. The workshop should consider the purpose of increased understanding; the audiences to which information campaigns should be addressed; the groups and individuals through which information can be passed and the media which can be used; the kinds of information needed for different purposes and the sources from which they can be obtained; the special needs of particular nations or population groups as to the information which is required and the means by which it can be disseminated. Participants in such a workshop should be drawn from groups having experience of public awareness campaigns relating to marine mammals, together with specialists in the use of the media for this purpose.

They should also include scientists familiar with the information which has to be presented and the sources, if any, from which it can be obtained. In addition, there should be representatives from the specialists groups to which campaigns may be addressed, particularly administrators and the hunting and fishing industries.

Recommendation 33

Therefore, it is recommended that:

UNEP sponsor, in the first biennium of the Plan, an international workshop on the ways in which campaigns to increase public understanding of the problems related to marine mammals conservation can be co-ordinated, and also made more effective on a world-wide scale. UNEP should seek support for this workshop from UNESCO and IUCN, and from NGOs already active in this field.

4.70 A number of useful steps could also be taken to bring together information about the public information materials on marine mammals which already exist. For example, a list of films about marine mammals was available at Bergen but not published, and an updated list could be a small but significant part of the public awareness programme. Inventories of available institutional materials - booklets, filmstrips, films and audio-recordings - could also be quickly assembled, and consideration given to establishing a "lending library" of such materials. Several NGOs already have the beginnings of such lists and collections.

4.71 This chapter has also identified a number of positive steps toward the development of publicity materials which could be taken in advance of the workshop.

Recommendation 34

It is therefore recommended that:

(a) UNEP and FAO, in consultation with UNESCO, IUCN and appropriate NGOs, take whatever steps are possible to bring about the early production of informative material on marine mammals suitable for wide distribution. This material might include: (i) a short popular book on the subject of marine mammals and fishermen, as proposed by ACMRR; (ii) a series of booklets directed to various sections of the population and dealing with different mammal groups in accordance with local and regional interests. Consideration should be given to translating these materials into several different languages appropriate to their subject matter;

(b) UNEP, in consultation as in (a), stimulate or arrange for the compilation and publishing of lists of currently available publicity material dealing with marine mammals in such categories as films, film-strips, audio-recordings and booklets.

4.72 Consideration should be given to producing a regular bulletin concerning all aspects of the implementation of this Plan of Action. Such a publication, which it is suggested might be a quarterly, would probably be extracted from

existing bulletins which already have wide international circulation. If the basic material was assembled by the proposed secretariat, it could be made available for distribution on the mailing lists of some or all of these publications, and to others, as an effective way of broadening awareness of marine mammal issues.

Recommendation 35

It is recommended that:

The secretariat investigate and implement, if possible, production of a regular bulletin describing progress under the Plan for distribution in whole or by extract in the newsletters of interested conservation organizations.

## Chapter V

## ARRANGEMENTS AND SCHEDULE FOR IMPLEMENTATION OF THE PLAN

5.1 The present report identifies five areas of concentration for the activities proposed under the Plan. It also puts forward a number of specific recommendations for actions to be taken by UNEP, FAO and other bodies. It is proposed in section III.3 that UNEP and FAO should, after submission of the Plan to their governing bodies, work jointly to establish the necessary arrangements to enable the Plan to be implemented. There will however be need for a body to be set up to undertake the detailed arrangements for the execution of the various components of the Plan, and to oversee their development. This will involve co-ordination of activities undertaken by a considerable number of Governments, intergovernmental bodies and NGOs. It would be appropriate for this purpose to establish an ad hoc planning and co-ordinating committee, to be initially convened by UNEP and FAO jointly. While, in view of the international nature of the programme, it would not be appropriate for individual Governments to be represented on this committee, it should have a balanced representation of United Nations, intergovernmental organizations and NGOs.

5.2 In view of the large number and diversity of organizations involved, selection of membership of the planning and co-ordinating committee may be difficult. An initial membership should be established for the first biennium of the Plan. If the committee were to remain in being during a longer period, some provision for rotation of part of the membership might be desirable. The initial membership should, it is suggested, include representatives of the ECG members, IWC, the secretariat of CITES and NGOs selected in consultation with IUCN.

5.3 To give effect to these suggestions:

Recommendation 36

It is recommended that:

As an early step in the implementation of the Plan UNEP and FAO jointly, and in consultation with IUCN, convene an ad hoc planning and co-ordinating committee to arrange and oversee the further implementation of the Plan, including co-ordination of the activities of Governments, intergovernmental bodies and NGOs. Membership of the committee should include representatives of UNEP, FAO, UNESCO, IWC, the secretariats of CITES, CMSWA, IUCN and appropriate NGOs.

5.4 The need for an ad hoc scientific advisory committee of scientists has already been noted (Paragraph 438) in connection with the research activities to be undertaken under the Plan. This committee should also serve as a primary source of advice to the planning and co-ordinating committee on all scientific aspects of the Plan. Liaison between the two committees would also be improved by some cross-membership; the chairman of each committee could perhaps be a member of the other.

5.5 The committee structure proposed here would require substantial secretariat support. Some such support during meetings could perhaps be provided by the sponsoring and participating organizations, but in addition continuous servicing would be necessary. It is suggested that in the first phase, this could be done by one experienced professional, full-time, serving as secretary of the planning and co-ordinating committee, and perhaps also of the scientific advisory committee, with a secretary and, possibly, a technically qualified assistant. The location of the Secretariat should be agreed between FAO and UNEP, in consultation with IUCN. It could be at the headquarters of one of these bodies. Alternatively, if an independent location were desired, Cambridge, United Kingdom, could be appropriate, since it is now the centre of a considerable amount of marine mammal activity.

Recommendation 37

It is recommended that:

UNEP and FAO, in preparing for implementation of the Plan, establish a full-time secretariat consisting of an officer-in-charge with such assistance as is deemed necessary. The functions of the secretariat should include maintaining liaison between the organizations responsible for actions under the Plan, developing or stimulating development of proposals for actions under the Plan and, as appropriate, taking part in arrangements for and participating in meetings held under the Plan.

5.6 One important function of the secretariat would be to assist in the exchange of information about marine mammals and their environment. Some specific functions are already provided for in principle, e.g., the compilation and publication of catch statistics by FAO (co-operating, in the case of whales, with IWC and in the case of seals with regional fisheries bodies and SCAR) regarding which the ACMRR put forward its Recommendation 5. Other specific proposals have been put forward in this Plan.

5.7 If the proposed actions are set in motion immediately after acceptance of the Plan by the governing bodies of UNEP and FAO, the immediate objectives of the Plan can be reached in about two years provided there are no long delays in securing the co-operation of the organizations mainly concerned. Many of the actions can be taken by UNEP and FAO or, it is hoped, by other bodies under existing authority. A list of activities to be implemented in the first biennium of the Plan is included in the financial plan.

5.8 The future implementation of the Plan would be of indefinite duration, but might conveniently be considered as the second decade of a global programme for the environment co-ordinated and catalysed by UNEP.

5.9 Activities to be implemented after the first biennium depend to a large degree on the achievements reached during the initial two years. It should be a common task for the planning and co-ordinating committee and the ad hoc advisory committee of scientists to prepare for this. Factors needing to be taken into account include:

(a) Progress made in implementing the proposals for the first biennium;

(b) Progress in formulation of objectives;

(c) Further evolution of international law and of management policies of international organizations concerned;

(d) Evolution of the WCS;

(e) Possible arrangements for funding.

5.10 It is suggested that the process of development of proposals for activities to be implemented after the first biennium of the Plan should consist of the following steps:

(a) Planning and co-ordinating committee and advisory committee of scientists jointly prepare draft proposals, possibly with assistance from a consultant;

(b) These draft proposals are circulated to Governments, inter-governmental bodies and a wide range of NGOs for comment;

(c) On the basis of the comments received the drafts are revised by the planning and co-ordinating committee and the advisory committee of scientists, again possibly with a consultant;

(d) The revised drafts are considered by a wider and more representative Review Meeting, following which final proposals are prepared by or on behalf of the planning and co-ordinating committee.

5.11 The Review Meeting referred to under (d) above could be an augmented meeting of the ad hoc planning and co-ordinating committee and the ad hoc advisory committee of scientists, expanded by the addition of an equal number of delegates of the Governments concerned.

Recommendation 38

It is recommended that:

(a) UNEP, FAO and IUCN jointly convene a Review Meeting to be held towards the end of the first biennium of the Plan. The purpose of this meeting would be to review the progress which has been made and to consider and make recommendations on the draft proposals and budget for new activities. The meeting should consist of the planning and co-ordinating committee and the ad hoc advisory committee of scientists together with an approximately equal number of representatives of the Governments concerned.

5.12 The review meeting should take into account the needs for:

(a) Identifying new threats to marine mammals and their environment;

(b) Continuous monitoring of the successes and difficulties encountered in conserving them;

(c) Identifying research needs as these emerge and supporting appropriate scientific research and analyses;

(d) Further improving relevant national and international laws;

(e) Ensuring that research and conservation activities regarding marine mammals are integrated with such activities concerned with the marine environment as a whole, regionally and globally;

(f) Ensuring that the results of research and information about events in the sea - especially as a result of human activities there - are widely disseminated, and their implications understood by policy and decision makers, and by the public;

(g) Encouraging co-operation, mutual aid and joint action by the many organizations and associations concerned, whether private, public or governmental; local, national or international; regional or world-wide;

(h) Periodic intergovernmental consultations in an appropriate forum.

5.13 It would be expected that during the above process organizations would define their roles in implementing the long-term Plan, commit themselves to take responsibility for certain tasks and arrange mutual aid among themselves. In addition, it is expected that some Governments, as well as national and international funding agencies outside the United Nations system, would have indicated their interest in contributing, financially or in kind, to marine mammal conservation.

## Chapter VI

## PRIORITIES AND RECOMMENDATIONS

6.1 The recommendations which have been developed in this report in table 1 have been classified according to the general areas with which they are concerned.

6.2 In this table the purposes which the recommendations are intended to serve have been classified in three groups:

A. Urgent situations in which species or populations are known to be in a critical state and steps should be taken to alleviate the most serious threats;

B. Information needed to determine the extent and nature of situations which are believed to be causing threats to marine mammal populations but about which insufficient is known;

C. Improve conditions for the conservation of marine mammals by increasing scientific capability, improving legal and administrative machinery or adding to public understanding.

The actions which should be taken as a result of the recommendations have also been classified as follows:

1. Organize the machinery needed to implement the Plan;

2. Study situations which are identified as important but on which either more information is needed or it is necessary to determine the appropriate remedial actions. May involve use of consultants;

3. Act to carry out a specific recommendation; this could be a domestic matter for the body concerned, e.g., compile and publish bulletins, etc.;

4. Represent to States or to other international bodies the need to undertake certain actions which would help to improve the conservation of marine mammals either locally or world-wide;

5. Catalyse and stimulate the development of needed activity; generally relates to scientific studies and may require organizing a small workshop, providing seeding funds to start a project, etc.;

6. Meet to discuss a problem or develop proposals, generally where a variety of points of view or expertise are needed;

7. Finance projects for which such support is needed, may be either directly from UNEP/FAO sources, or by locating an available source;

8. Plan for the implementation or further development of the Plan of Action.

6.3 As far as the activities are concerned which would be the responsibilities of FAO, UNEP and the Plan group (secretariat, ad hoc planning and co-ordinating committee and ad hoc advisory committee of scientists), many of these would probably be part of the regular activities of these bodies and would require no special provision. These would include the recommendations in categories 1 (Organize), 4 (Represent), 5 (Catalyse) and 8 (Plan). This would also apply to some of the activities falling in category 3 (Act), but others in this category might involve special expenditures that would have to be provided for. Some parts of the suggested study activities (category 2) could well be done "in-house" but others would be likely to require the services of consultants; others might at a later stage require a small workshop meeting. The two major meetings which are recommended (category 6) would require special funding for which provision would have to be made in preparing to implement the Plan. The Recommendations calling specially for financial assistance (category 7) would, of course, also require special provision.

Urgent situations

6.4 The species and populations which are believed to be in the most serious situations are reviewed in detail in appendix 1. The principal source of information on which this is based is the IUCN Red Data Book, 1978 edition, updated where new information has significantly changed our understanding of the status of species since that time, although other sources of information have also been used.

6.5 It is evident that urgent and specific actions are needed in all the principal areas covered by the plan - scientific, legal, administrative and public awareness. Recommendation 12 proposes immediate actions to be taken by the ad hoc planning and co-ordinating committee to identify the particular remedial steps which should be taken to deal with the most urgent situations. On the basis of the recommendations of the ad hoc planning and co-ordinating committee the appropriate follow-up actions should be taken by UNEP and associated organizations. Most of these actions would probably be representational or catalytic, but in some cases it might be necessary to arrange for further investigations to be made. Recommendation 12 and the consequent follow-up actions should be given the highest priority. Most of the immediate steps which need to be taken to remedy the identified critical situations are of a legal or administrative nature. There can be no doubt that as studies progress other critical situations or other ways of reducing the risks to stocks known to be threatened will be identified.

Information needed

6.6 Six studies were identified in which the services of a consultant were likely to be required to obtain information. Four of these dealt with the extent and nature of harvesting not under international control, of deliberate non-utilizing killing, of incidental destruction and of man-made effects on breeding areas. One was to review the available information on the occurrence of harmful contaminants in marine mammals and their environment, and on their effects. The sixth study was to review as far as is known the occurrence of competition between marine mammals and newly developed fisheries on their food

animals. It is likely that the greatest scientific effort on food relationships in marine communities at this trophic level will continue to be exerted in studies relating to the krill complex of the Southern Ocean. However, the more general review of such relationships as they affect marine mammals which is proposed here should be given high priority. This is both because of the potential importance of such effects in delaying the recovery of depleted populations and because parallel studies of other systems, which may in some ways be simpler than the krill-centred Southern Ocean system, amy usefully supplement the studies on southern waters. The other five proposals, considered together, are intended to build up a world-wide picture of the direct man-induced deaths of marine mammals from all causes. This will be an extremely valuable background to the whole of the programme intended to arise from this Plan, and these projects also are therefore of high priority.

Means of improving conservation practices

6.7 The proposals falling in this category are numerous and diverse. In the scientific sector they include increasing the supply of scientists, improvement of scientific information systems and, in a rather different category, steps to stimulate independent assessment of the scientific bases for management. The last is of extremely high priority in relation to the development of satisfactory management techniques particulary for exploited populations. Of the others, the production of additional scientists to work on marine mammals is highly desirable.

6.8 The proposals bearing on legal and administrative problems are very diverse among themselves. As noted above, many of the problems associated with populations which are immediately threatened are of this nature and the sponsoring organizations of the Plan, and its secretariat, should use every effort to assist and encourage the nations concerned in these matters. Highest priority should also be given to steps aimed at adoption of an international convention for the conservation of marine mammals with the widest possible range both of member nations and of species within its ambit.

6.9 Several recommendations are concerned with the improvement of public understanding. Of these, the most fundamental is that proposing an international workshop on ways of increasing world-wide public understanding of questions relating to marine mammals conservation and management. This should be given high priority, with emphasis on means of increasing local understanding in areas where specific problems exist, and on the methods of maintaining accuracy and balance in presentations to the public.

## Table 1

SUMMARY OF THE RECOMMENDATIONS CLASSIFIED ACCORDING TO THE GENERAL AREA OF ACTIVITY TO WHICH THEY RELATE. THE ORGANIZATIONS WITH PRIMARY RESPONSIBILITY, THE BASIS OF THE NEED FOR ACTION AND THE KIND OF ACTION REQUIRED ARE ALSO SHOWN. THE HIGHEST PRIORITY RECOMMENDATIONS ARE MARKED WITH AN ASTERISK

| General area | Subject | Rec. No. | Page | Lead Organizations | Need for action | | | | Kind of action | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Urgent situation A | Information needed B | Improved conditions C | Organization 1 | Study 2 | Act 3 | Represent 4 | Catalyse 5 | Meet 6 | Finance 7 | Plan 8 |
| Objectives | Optimum level | 1 | 24 | | | | X | | | X | | | | | |
| | Formulate objectives | 2 | 29 | | | | X | | | | | | | | X |
| Plan activities | Critical situations | *12 | 36 | SC (SAC) | X | | | | X | | | | | | |
| | | *12 | 36 | UNEP, FAO (IUCN) | X | | | | | | X | X | | X | |
| Organize operations | Scientific Advisory Committee | 18 | 42 | FAO, UNEP | | | X | X | | | | | | | |
| | Standing Committee | 36 | 59 | FAO, UNEP | | | X | X | | | | | | | |
| | Secretariat | 37 | 60 | UNEP, FAO | | | X | X | | | | | | | |
| | Review Meeting | 38 | 61 | UNEP, FAO, IUCN | | | X | | | | | | X | | |
| Review situations | Expoitation not internationally controlled | 3 | 31 | FAO | | X | | | X | | | | | | |
| | Non-utilizing killing | 4 | 32 | FAO | | X | | | X | | | | | | |
| | Incidental killing (data) | 5 | 32 | FAO | | X | | | X | | | | | | |
| | Contaminants | 8 | 34 | UNEP (ICES, IOC) | | X | | | X | X | | | | | |
| | Effects on breeding areas | 9 | 35 | UNEP | | X | | | X | | | | | | |
| | Competition for food | *11 | 36 | FAO | | X | | | X | | | | | | |
| | Shared resources (P.o.C.) | 17 | 40 | UNEP, FAO | | | X | | | | X | | | | |
| | Shared resources (biological, economic) | 17 | 40 | FAO | | | X | | X | | | X | | | |
| | Incidental killing (legal) | 28 | 51 | IUCN | | | X | | X | | | | | | |

Table 1 (continued)

| General area | Subject | Rec. No. | Page | Lead Organizations | Need for action | | | Kind of action | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Urgent situation A | Information needed B | Improved conditions C | Organization 1 | Study 2 | Act 3 | Represent 4 | Catalyse 5 | Mee: 6 | Finance 7 | Plan 8 |
| Improved information | Catch statistics | 6 | 33 | FAO (UNEP, IUCN, IWC, BIWS) | | | X | | | X | | | | | |
| | Trade statistics | 7 | 33 | IUCN (CITES; FAO) | | | X | | X | | | | | | |
| | Scientific information system | 19 | 44 | FAO, UNEP (IOC) | | | X | | X | | | | | | |
| | Inventory of legislation | 27 | 50 | UNEP, FAO, IUCN | | | X | | X | | | | | | |
| Increase number of scientists | Provide student fellowships | 20 | 44 | UNEP, UNESCO (WWF, CEE) | | | X | | | | | | | X | |
| | Accept fellows | 20 | 44 | National bodies | | | X | | | X | | | | | |
| | Identify training institutes | 20 | 44 | UNEP, UNESCO (FAO) | | | X | | | X | | | | | |
| | Identify training needs | 20 | 44 | International and regional organizations | | | X | | | X | | | | | |
| | Employ more scientists | 20 | 44 | Governments | | | X | | | X | | | | | |
| | Provide senior fellows | 20 | 44 | Governments and IOC) | | | X | | | | | | | X | |
| Increase scientific activities | Build up observation network | 21 | 45 | UNEP, IUCN, NGO | | | X | | X | X | | | | | |
| | Independent monitoring of management research | *22 | 46 | FAO, IUCN | | | X | | | | | X | | X | |

Table 1 (continued)

| General area | Subject | Rec. No. | Page | Lead Organizations | Need for action | | | Kind of action | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Urgent situation A | Information needed B | Improved conditions C | Organization 1 | Study 2 | Act 3 | Represent 4 | Catalyse 5 | Meet 6 | Finance 7 | Plan 8 |
| Protected areas | Provision for pinnipeds | 13 | 37 | IUCN | | | X | | X | | | | | | |
| | Develop concepts and practices | 14 | 38 | UNEP (IUCN, IWC, FAO) | | | X | | | X | | | | | |
| | Sampling in protected areas | 16 | 39 | FAO (UNEP, IWC, IUCN) | | | X | | | X | | | | | |
| | Legal issues | 29 | 51 | IUCN (UNEP) | | | X | | X | | | | | | |
| | Follow-up of workshop | 15 | 39 | UNEP, IUCN, UNESCO, IWC | | | X | | X | X | X | | | | |
| Law and administration | Management of Southern Ocean | 10 | 35 | FAO, UNEP | | | X | | | | | X | | | |
| | Shared resources (Principles of Conduct) | 17 | 40 | UNEP | | | X | | | | X | | | | |
| | Law of the Sea | 23 | 48 | UNEP, FAO | | | X | | | | X | | | | |
| | Renegotiation of agreements | 24 | 49 | UN, Specialized Agencies | | | X | | | | X | | | | |
| | Actions prior to LOS treaty | 25 | 49 | FAO, UNEP | | | X | | | | X | | | | |
| | Co-ordination between over-lapping bodies | 26 | 50 | UNEP | | | X | | | | X | | | | |
| | | | | UNEP, IWC | | | X | | | | X | | | | |
| | Live capture and harassment | 28 | 51 | IUCN | | | X | | X | | | | | | |
| | Migratory species | 29 | 51 | UNEP | | | X | | X | | X | | | | |
| | World Heritage Lists | 30 | 52 | UNEP (UNESCO) | | | X | | | | X | | | | |
| | Biosphere Reserves | 31 | 53 | UNESCO, UNEP | | | X | | X | | | | | | |
| | Legal Workshop | 32 | 54 | UNEP, FAO (UNESCO, IUCN) | | | X | | X | | | | | | |

Table 1 (continued)

| General area | Subject | Rec. No. | Page | Lead Organizations | Need for action | | | Kind of action | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Urgent situation A | Information needed B | Improved conditions C | Organization 1 | Study 2 | Act 3 | Represent 4 | Catalyse 5 | Meet 6 | Finance 7 | Plan 8 |
| Public information | Workshop | 33 | 57 | UNEP (UNESCO, IUCN) | | | X | | | | | | X | | |
| | Production and listing of material | 34 | 57 | UNEP, FAO (UNESCO, IUCN, NGOs) | | | X | | | X | | X | | | |
| | Bulletin on Plan progress | 35 | 58 | PS | | | X | | | X | | | | | |

## Appendix I

### THREATENED MARINE MAMMALS - SYSTEMATIC LIST

A. This appendix is based largely on the information in the IUCN Red Data Book (1978 Edition), updated where new information has significantly changed our understanding of the status of species since that time.

The IUCN categories "endangered", "vulnerable", "rare" and "indeterminate" are defined as follows:

Endangered - In danger of extinction and survival is unlikely if the causal factors continue operating. Included are species which have been reduced to a critical level.

Vulnerable - Likely to move into the endangered category in the near future if the causal factors continued operating. Included are species with populations that have been seriously depleted and whose ultimate security has not yet been assured.

Rare - With small world populations, not at present endangered or vulnerable but at risk.

Indeterminate - Suspected of belonging to one of the first three categories but insufficient information is currently available.

The lists do not include forms that were formerly threatened, but which were, in 1978, considered by IUCN to be out of danger. The lists are clearly deficient with respect to a number of odontocetes about which little is known but which might be rare. The status of cetaceans has more recently been reviewed by the United Kingdom Nature Conservancy Council (NCC) for the Parties to CITES. In 1983 all cetacean species were included in CITES Appendix I. IWC has listed a number of species and populations of others as Protected Stocks; under the current management procedure these are stocks believed to be 10 per cent or more below MSY level. This does not imply that these stocks are necessarily in any danger of extinction.

B. Species

Certain of the species listed below are "endangered" in terms of the CITES convention. They are identified as "CITES(I)", "CITES(II)" or "CITES(III)" in accordance with whether they were listed in appendixes I, II or III as of 1983. The first are "species threatened with extinction which may be affected by trade" and a trade in specimens of which is "subject to particularly strict regulation and only authorized in exceptional circumstances". Appendix II species are species deemed not necessarily to be now threatened with extinction but which may become so unless trade in specimens of them is subject to strict regulation. All cetacean species are included in CITES appendix I. In CITES appendix III are included all species which any Party has "identified as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation, and as eding the co-operation of Other Parties in the control of trade".

Some species also are listed in Class A of the Annex to the African Convention on the Conservation of Nature and Natural Resources (AfConA). Species in that Class are "totally protected throughout the entire territory of the Contracting States: hunting, killing, capture and collection being permitted only under licence and when in the national interest or for scientific purpose". Trade in or transport of them or of parts of them is regulated.

Species marked MSC(I) or (II) are respectively listed in Appendix I or Appendix II of the Convention on Conservation of Migratory Species of Wild Animals, which came into force in November 1983. Appendix I lists migratory species which are endangered, meaning they are in danger of extinction throughout all or a significant portion of their range. In Appendix II are listed those which have an unfavourable conservation status and which require international agreements for their conservation and management, as well as those having a conservation status which would significantly benefit from the international co-operation that could be achieved by an international agreement.

1. Possibly or nearly extinct

(a) Japanese sea lion (Otariidae - Zalophus californianus japonicus). One of three races of California sea lion. Now almost certainly extinct, as a result of persecution by fishermen and perhaps also by other human diturbances, on coastal islands of Japan where it was last recorded in the fifties. Continued existence reported on Dokto Island, Sea of Japan and may still exist off the east coast of Korea.

(b) Caribbean monk seal (Phocidae - Monachus tropicalis). Originally off shores and islands of Caribbean and Gulf of Mexico. Depleted by eighteenth century sealing; survivors persecuted by fishermen. Last authenticated report 1962, a single animal on Isla Mujeres, off Yucatan Peninsula. Possibly still inhabiting Chinchorro Reef, Mexico;

(c) North Pacific gray whale (Eschrichtidae - Eschrichtius robustus). This species as a whole is not endangered, but two of the three known major original stocks are extinct or very nearly so. The surviving eastern North Pacific stock has recovered well from severe depletion due to whaling and is now probably more than 18,000 animals, about its pre-exploitation level. The Atlantic stock has been extinct, possibly due to early whaling, probably for several hundred years. The western North Pacific stock was, until recently, thought to have been exterminated.

However, it has been reported that animals have been sighted there in recent years and that the Republic of Korea and China have caught them. It is possible that these are survivors from the original population or that the eastern region began to be repopulated by an "overflow" from the recovering population in the west. The "subsistence" catch of gray whales - over 100 annually - in the USSR is thought to be derived wholly from the eastern stock. CITES(I).

2. "Endangered"

(a) Indus dolphin or susu (CETACEA - Platanistidae - Platanista indi) (Syn. P. minor). In the mid-nineteenth century inhabited the Indus River and its main tributaries throughout their lengths; a few hundred remain in short stretches of the Indus, between barrages, within Sind and Punjab Provinces of Pakistan, where it is protected by law. Decline caused by restrictions of original habitat, through impoundment and water diversion, but also illegal exploitation as human food continues CITES(I);

(b) Blue whale (Balaenoptera musculus). Depleted by whaling in twentieth century. Protected worldwide by IWC since 1960 in North Atlantic, 1965 in Southern Ocean, 1966 in North Pacific, 1967 worldwide. It is known that individuals of this species are still occasionally caught. It is probably increasing but this is not certain. The Southern Hemisphere population is probably about 5,000, with a few thousand in other oceans. There are probably as many again of the pygmy blue whale sub-species which was not seriously exploited until relatively late and has been less depleted than the main stock. CITES(I), MSC(I);

(c) Humpback whale (Megaptera novaeangliae). Depleted by whaling in twentieth century. Protected worldwide by IWC since 1966 but no clear evidence of increasing numbers except in northwest Atlantic. A few are still caught regularly in aboriginal subsistence fisheries in the North Atlantic. As this species breeds close to shore and is of interest to the public in some areas it may be affected by disturbance. Present number probably considerably less than 10,000. CITES(I), MSC(I);

(d) Bowhead or Greenland right whale (Balaena mysticetus). Depleted throughout its range by nineteen century whaling. Protected by IWC since 1946, but subject to "aboriginal whaling" for local consumption by IWC members. Probably four distinct populations:

(i) Eastern North Atlantic - very rare, uncertain evidence of any increase;

(ii) Western North Atlantic - very rare, uncertain evidence of any increase;

(iii) North Pacific (Bering, Chukche and Beaufort Seas) - depleted by commercial whaling in the late nineteenth and early twentieth centuries. Some recovery but now possibly stable under a subsistence catch by Alaskan inuits. Present population about 3,500, about 20 per cent of original. Scientific Committee of IWC has expressed grave concern about the survival of this stock under any exploitation. The current rate of reproduction appears very low;

(iv) Okhotsk Sea - apparently was increasing up to the sixties but few recent sightings. Was thought exterminated in Sea of Japan but one was caught in the late sixties. CITES(I);

(e) Black right whale (Eubalaena glacialis). Three sub-species were hunted almost to extinction between the fifteenth and nineteenth centuries. Protected by IWC from pelagic whaling since 1946. In western North Atlantic some signs of increase, but in the eastern North Atlantic has not been reported since one was killed about 1959. In the Southern Hemisphere there have been strong indications of increase off South Africa and New Zealand, and possibly off Argentina. Elsewhere no increase is indicated. Sightings suggest a Southern Hemisphere population of about 3,000. No clear sign of recovery of North Pacific population. CITES(I) MSC(I);

(f) Marine otter (CARNIVORA - Mustelidae - Lutra felina) formerly occurred along Pacific coast of South America from Peru south. Gravely reduced, now only in a few areas of Peru where population estimated at 200-300. Still killed by fishermen for alleged damage to prawn fishery. No commercial value. CITES(I);

(g) Southern river otter (CARNIVORA - Mustelidae - Lutra provocax) distributed on west coast of South America from central Chile south. Range not reduced but numbers severely depleted by fur hunting. No population estimates available. No protection in some countries. CITES(I);

(h) Mediterranean monk seal (PINNIPEDIA - Phocidae - Monachus monachus). Off northwest coast of Africa and in Mediterranean basin. A few hundred individuals survive; decline continues as result of persecution by fishermen and by other human disturbances. Legally protected in several countries, but enforcement incomplete. Subject of a specialist meeting convened by IUCN with UNEP support, in Rhodes, Greece, which resulted in a draft Plan of Action for conservation of the species. AfConA: all African States concerned are Party to the convention. CITES(I), MSC(I and II);

(i) Hawaiian monk seal (Phocidae - Monachus schauinslandi). Still occupies its original range, but decreasing in some breeding grounds, although protected and possibly increasing in others. Possibly now fewer than 1,000 individuals. Was nearly exterminated by hunting in the nineteenth century, and now affected by human disturbance wherever this continues, notwithstanding injunctions against "harassment" and molestation under United States and state laws. CITES(I);

(j) Amazonian manatee (SIRENIA - Trichechidae - Trichechus inunguis). Was distributed thoughout Amazon system (Brazil, Columbia, Peru) and headwaters of Orinoco (Venezuela), but depleted by hunting; range now restricted but unknown, as is the present population size. Legally protected in Brazil and Peru, but enforcement thought to be incomplete. CITES(I);

3. "Vulnerable"

(a) Fin whale (CETACEA - Balaenopteridae - Balaenoptera physalus). This species has been heavily exploited in the Southern Hemisphere where the original population of about 400,000 legally takable animals has been reduced to about 80,000, and in the North Pacific where the reduction was from about 43,000 to about 16,000. In both cases this species has been protected by IWC since about 1975. In the North Atlantic a number of local stocks are distinguished by IWC, some are protected, but others are still exploited, notably those off Iceland and Spain. Some catching outside IWC under flags of convenience has also occurred in the North Atlantic in earlier years. CITES(I);

(b) Northern bottlenose whale (Ziphiidae - Hyperoodon ampullatus). In Boreal and Arctic North Atlantic. Depleted by whaling in the nineteenth century. None caught commercially at present and catching prohibited by IWC. Present numbers not known, nor details of present distribution and migration patterns;

(c) Galapagos fur seal (Otariidae - Arctocephalus galapagoensis). Once common throughout the archipelago, nearly exterminated by nineteenth century sealing; thought at beginning of twentieth century to be extinct, but rediscovered on James Island in 1957. Slowly recovering and extending range under protection but now restricted by habitat availability. Now 5 to 10 thousand individuals on ten or more islands. CITES(I);

(d) Juan Fernandez fur seal (Otariidae - A. philippii). Once ranged from Strait of Magellan to Peru. Nearly exterminated by nineteenth century sealing; now slowly recovering under protection on some islands but still only a few hundren individuals on two islands off coast of central Chile. CITES(II);

(e) Guadalupe fur seal (Otariidae A. townsendi). Originally ranged from southern California to Baja California. Thought to have been exterminated but rediscovered in mid 1950s. Increasing under protection by the United States of America and Mexico and colonies or groups now on several islands, but suitable habitat is limited and may be shrinking. CITES(I);

(f) West African manatee (Trichechidae - T. senegalensis). Formerly distributed from Senegal to Angola, mainly in Senegal, Niger, Benue and Congo Rivers systems. Range now much reduced; reported in Gambia River, eastern shores of Volta Lake, in Benue - Niger systems (including Kainji Lake), possibly Cross River (Nigeria) and Lakes Lere and Trene (Chad). Was depleted by hunting; still declining despite protection by national laws incompletely enforced; vulnerable to incidental capture in fishing nets. AfConA; all States concerned are Party to the convention. CITES(II);

(g) West Indian (Caribbean) manatee (Trichechidae - I. manatus). Range is from Florida (United States of America) to Guyana. Depleted by hunting; apparently secure populations in Belize, Guyana and Suriname, but declining elsewhere. Population in Florida is severely adversely affected by boat traffic and other causes of mortality. Present population possibly in range 5,000-10,000. Vulnerable to incidental catch by fishing nets, to boat propellers and to other human disturbances. Protected in most countries by law incompletely enforced. Threatened also by shrinking habitat and herbicide treatment of waterways. CITES(I);

(h) Dugong (Dugonidae - Dugong dugon). Wide range throughout tropical and sub-tropical Indo-Pacific. Depleted by hunting over most of this range but population size unknown. A few large populations (thousands), particularly in the Australian area, but nearly extinct in other areas. Vulnerable to incidental capture in fishing and other nets, to pollution affecting sea-grass beds; and to other human disturbances, as well as continued hunting. Protected in many countries but law incompletely enforced. AfConA; all African States concerned are Party to the convention. CITES(I and II), MSC(II).

4. "Rare"

(a) Saimaa seal (Phocidae - Phoca hispida saimensis). Confined to Saimaa Lake system (Finland). Reduced by 1958 to 40 individuals by persecution; now increased under protection to 200-300 animals, but habitat now reduced through pollution, which they avoid. Some licensed shooting following fishermen's complaints;

(b) Hooker's sea lion (Otariidae - Phocarctos hookeri). Confined as a breeding species to a few sub-Antarctic islands off New Zealand and with a population of only circa 6,000. Subject to an unquantified incidental take during squid fishing operations;

(c) Australian sea lion (Otariidae - Neophoca cinerea). Very restricted breeding range on southern Australian coast. Population circa 5,000.

5. "Indeterminate"

(a) Whitefin dolphin or Beiji (Plantanistidae - Lipotes vexillifer). Originally thought to be confined to streams flowing into Tung Ting Lake (China), now known to exist in the Yangtze River. Numbers unknown but described in Chinese scientific literature as "very rare". CITES(I);

(b) Kurile harbour sea (Phocidae - Phoca kurilensis). Former range unknown and present distribution unsure but occurs in coastal areas of Hokkaido and Kurile, Aleutian Islands, West Alaska (about 5,000 individuals). Protected in United States of America and USSR and partially in Japan, but pups still expoited for local use, and laws incompletely enforced;

(c) Laptev walrus (Odobenidae - Odobenus rosmarus laptevi). Subspecies or race of walrus in Laptev Sea and adjacent parts of Kara and East Siberian Seas. Protected from 1957 under USSR law, but apparently not increasing. Declined from 60,000 to 10,000 individuals in 1930s, for reasons unknown but possibly by hunting, by analogy with decline during 1940s and 1950s of the Atlantic walus (O. r. rosmarus) in the neighbouring region of Novaya Zemlya/Kara Sea.

6. The sei whale (Balaenoptera borealis) was little exploited until about 1960. Heavy catches in the next few years rapidly reduced its numbers in the North Pacific and the southern hemisphere, and it has been protected by IWC of these oceans since 1976 and 1978 respectively. In the North Atlantic the relatively small stocks have been less exploited. It is thus in a somewhat similar situation to the fin whale.

7. Under the present IWC procedure, baleen whale stocks are placed in the Protection Stock category if they are estimated to be 10 per cent or more below the MSY level, and this is assumed to be 60 per cent of initial stock size. Thus the upper boundary of the Protection Stock category is well above the level at which there is likely to be any risk of moving to extinction in the absence of hunting, and there is probably a substantial margin for errors in the estimates.

8. During 1978 reviews of the assessments of sperm whales (Odontoceti - Physeter catodon; syn. P. macrocephalus) indicated that although still rather abundant and world-wide in distribution, this species has been reduced significantly in some areas by whaling. In particular, selective hunting for males has reduced their numbers in several areas to well under half of their original values. In some areas the reproductive rates as shown by the pregnancy rates, appear to have fallen as a result. In the southern hemisphere and the North Pacific all stocks are now protected except for the western North Pacific coastal stock. In the North Atlantic catching is continuing but only provisionally. CITES(I).

9. Although not listed in the Red Data Book, the Ganges-Bramaputra susu (Platanistidae - P. gangetica) is of highly uncertain status. The ACMRR study reported conflicting opinions as to whether or not it is endangered. In view of the vulnerability of freshwater marine mammals in general, especially in river systems with barrages, this species, which occurs in waters of two countries (Bangladesh and India) should be regarded at least as of "indeterminate" status, in IUCN terms, if not "vulnerable". In particular its status may be affected by the recently completed Farakka Barrage on the Ganges close to the Bangladesh (W. Bengal) frontier, which has separated the "reservoir" population in the relatively less exploited Bramaputra system from that in the Ganges system. This species is also found in Nepal. CITES(I).

10. The sea otter has recovered to a great extent on the western North American coast, both in Alaska and in California. It has also been established successfully by transplantation at intermediate points. It is also reported to have recovered under protection in USSR waters to at least 10,000 individuals, and now to be the subject of a plan for a fur industry. Its skin provides one of the most valuable of all furs; translocation has been recommended by Soviet scientists.

11. A number of other cetaceans are, or have been recently, subject to exploitation to a degree which may give cause for concern. The IWC Scientific Committee noted in 1980 that some stocks of the white whale or beluga (Delphinapterus leucas) were being depleted by subsistence hunting. One stock is believed to be at 10-15 per cent of its initial size, and others are believed to be subject to catches greater than their MSYs. A catch quota has been imposed on at least one of these stocks, but much wider and more stringent protective measures are needed, and the Committee urged that national and co-operative research programmes should be started by the countries concerned. There is also rather similar cause for concern for the narwhal (Monodon monoceros) in the same area. Several of the species of porpoises which have been taken in large numbers in the tuna purse-seines have been reduced below their levels of probable maximum net productivity, although others are still above this level. However, regulations which have been imposed on much of the industry, preventing setting in tuna schools associated with the most reduced species, have removed most of the present threat. The striped dolphin is the subject of a fishery off Japan, and preliminary assessments suggest that it may have been reduced to less than 50 per cent of the initial level. A national research programme is planned. Dall's porpoise (Phocormoides dalli) is taken both directly and in salmon gillnets in the North Pacific. Preliminary studies suggest that in the salmon fishery an

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incidental catch of between 9,000 and 25,000 porpoises is taken from a population of 600,000 - 2,300,000. With this amount of uncertainty in the estimates, and additional uncertainty in the recruitment rate, it is not yet possible to assess the future impact of the fishery upon the population. Further studies are therefore urgently needed.

12. The killer whale (Orcinus orca) is hunted by Norwegian fishermen on account of reputed damage to the herring fishery; a national catch limit was imposed in 1979 following a recommendation by the IWC Scientific Committee, and catching is now prohibited. In the 1979-80 season a large catch of killer whales (about 900) was taken for the first time in the Antarctic, from parts of Areas III and IV (0-130°E). At the 1980 meeting IWC extended the ban on pelagic whaling to include killer whales; it is therefore likely that there will be no further take at least until there are acceptable population estimates.

13. A considerable number of odontocetes species are not at all well known and may be rare. There are some records of these being occasionally killed by whalers. Two examples are the pygmy sperm whale (Kogia breviceps) and the dwarf sperm whale (K. simus).

14. Other small odontocetes, not especially sought by whalers or cetacean hunters may nevertheless be caught when encountered by them, and sometimes in considerable numbers. Such catches are unregulated. One such species is the southern bottlenose whale (Hyperoodon planifrons). Others are the false killer whale (Pseudorca crassidens), the melon-headed whale (Preponocephala electra). The populations of the bottlenosed dolphin (Tursiops truncatus) and the common dolphin (Delphinus delphis) in the Black Sea have declined as a result of hunting. The USSR and Bulgaria, have protected them for some years together with Romania and more recently still Turkey is not clear whether these populations are now increasing or not.

15. One other species of baleen whale, the pygmy right whale (Caporea marginata), is of uncertain status, being known only from a few strandings and sightings.

## Appendix 2

## INTERNATIONAL ORGANIZATIONS, AGREEMENTS AND PROGRAMMES CONCERNED WITH MARINE MAMMALS AND THEIR ENVIRONMENT

### A. UNITED NATIONS SYSTEM

### 1. United Nations

1.1 The United Nations Convention on the Law of the Sea includes two Articles (articles 5 and 120) referring specifically to marine mammals, as well as articles with implicit reference to them and to their environment (articles 64 and 116-119). Until such time as it may be made obsolete by new agreements, the Convention on Fishing and Conservation of the Living Resources of the High Seas (1958) is applicable to marine mammals inhabiting or visiting areas beyond national jurisdictions.

1.2 The United Nations Conference on the Human Environment made both explicit and implicit recommendations. The only explicit reference to marine mammals is in Recommendation 33: "that Governments agree to strengthen the International Whaling Commission, to increase international research efforts, and as a matter of urgency to call for an international agreement, under the auspices of the International Whaling Commission and involving all Governments concerned, for a 10-year moratorium on commercial whaling". Implicit reference to marine mammals, was made in Recommendations 29, 30, 31, 35-40, 43, 45, 56, 48-50 and 86-91. (Report of the United Nations Conference on the Human Environment, Stockholm, 5-16 June 1972: United Nations Publication, Sales No.E.73.II.A.14).

1.3 United Nations Environment Programme (UNEP). This was established by Resolution 2997 (XXVII) of the General Assembly in 1972 to provide institutional arrangements within the United Nations system for the protection and improvement of the environment. In relation to marine living resources, UNEP has formulated its responsibilities as the initiation and catalysis of activities which will ensure that the renewable living resources of the oceans do not suffer beyond recovery levels from human exploitation, and that the ecosystems which support the production of these resources are not degraded by anthropogenic forces with consequent reduction in the productivity of their resources. The Governing Council in 1974 explicitly decided the work on the study, conservation and wise management of living resources should include whales and other marine mammals.

### 2. Food and Agriculture Organization of the United Nations (FAO)

2.1 In connection with its responsibilities concerning the management of fishing (including seal hunting and whaling) and conservation of living aquatic resources (including most marine mammals as here defined) and scientific investigation of these.

2.2 To keep under review the programmes of the Organization in the field of fisheries and to conduct reviews of general and specific problems, FAO has established a Committee on Fisheries (COFI), membership of which is open to all Member States of the Organization.

2.3 As a source of independent scientific advice, FAO also set up the Advisory Committee on Marine Resources Research (ACMRR). This is a committee of scientists appointed in their individual capacities by the Director-General of FAO. It also serves as a source of advice to IOC. It was ACMRR which initiated in 1972 the actions which lead in 1976 to the Bergen Consultation, and ultimately to the present study. ACMRR also acts as an advisory body to AIOC on appropriate matters.

2.4 The Fisheries Department is responsible for fisheries activities, including marine mammals, within the Organization. The Department includes among its activities responsibility for the compilation and publication of statistics on the catches of and international trade in aquatic organisms. This is done in co-operation with regional fisheries bodies, national Governments and, for marine mammals, BIWS (see D.4). It is expected that such co-operation will continue with IWC when this organization takes over the task performed by BIWS in 1984.

2.5 A number of regional fisheries commissions and councils are established under the constitution of FAO. Virtually all of these could take actions ranging from the exchange of information, through the promotion and co-ordination of research, to recommending measures for management and conservation; in practice, few of them have yet done so. The bodies which have paid some attention to marine mammals are:

(a) General Fisheries Council for the Mediterranean (GFCM). The main problem considered has been the alleged interference of dolphins with some fishing operations in the eastern Mediterranean. The GFCM area of interest includes the Black Sea, and the once important dolphin fisheries of that area have been given some attention. However, MCBSF (see B.13 below) has in practice dealt with that question;

(b) Indo-Pacific Fisheries Commission (IPFC). IPFC activities have been limited to occasional exchanges of scientific information about some of the marine mammals inhabiting its broad area of interest, which includes also the inland waters of member countries.

2.6 Other FAO regional bodies which could become concerned, though probably to a minor degree, with certain marine mammals include:

(a) Indian Ocean Fisheries Commission (IOFC);

(b) Committee for the Eastern Central Atlantic Fisheries (CECAF);

(c) Regional Fisheries Advisory Commission for the Southwest Atlantic (CARPAS);

(d) Western Central Atlantic Fisheries Commission (WECAFC).

2.7 The FAO Fisheries Department is the focal point for the Aquatic Sciences and Fisheries Information System (ASFIS), which is linked with UNEP's INFOTERRA. ASFIS covers, in principle, scientific and management information pertinent to conservation of marine mammals. It is conducted in co-operation with UNESCO/IOC and other United Nations bodies, with interested governments and some national and private institutions.

3. United Nations Educational, Scientific and Cultural Organization (UNESCO)

3.1 In connection with responsibilities relating to scientific research in the ocean, implemented through its marine science programme of the Division of Oceanography and the Secretariat of the Intergovernmental Oceanographic Commission (IOC). IOC, while within the administrative and legal framework of UNESCO serves, by agreement, as a "joint specialized mechanism" of a number of organizations of the United Nations system whose executive heads participate in ICSPRO (see A.5.1 below). IOC is, by decision of the General Assembly of the United Nations and by agreement of its Member States and of the other agencies concerned, responsible for the co-ordination of the Long-term and Expanded Programme of Oceanic Research (LEPOR), of which the International Decade for Ocean Exploration (IDOE) is the initial phase. Activities relating to marine mammals may be included in LEPOR and IDOE, and this was so recommended by ACMRR in its Recommendation 6.

3.2 Another activity of UNESCO relevant to marine mammals is the Man and the Biosphere Programme (MAB) especially insofar as this relates to the conservation of island ecosystems and of coastal zones which are the breeding areas of some pinnipeds or in which economic development may affect the lives of marine mammals breeding or feeding just offshore.

3.3 Finally, the UNESCO General Conference adopted in 1972 a Convention Concerning the Protection of the World Cultural and Natural Heritage, which entered into force in 1975. Its provisions for the protection of "precisely delineated areas which constitute the habitat of threatened species of outstanding value from the point of view of science or conservation" may be applicable to the environment of some marine mammals. Under the Convention a World Heritage Fund, a Committee and Lists based on inventories of property and of sites are to be established ("World Heritage List" and "List of World Heritage in Danger").

4. Other agencies whose activities may have a bearing on marine mammals are the International Maritime Organization (IMCO) - principally in relation to marine pollution and its control - and the World Meteorological Organization (WMO) - principally in relation to studies of climatic change and its consequences. Both agencies participate in ICSPRO (See A.5.1 below).

5. Co-ordinating Mechanisms

5.1 A number of interrelated mechanisms are involved in the co-ordination of marine activities within the United Nations system:

(a) Administrative Committee on Co-ordination (ACC). This is a standing committee of the executive heads of organizations of the United Nations system. The function is to maintain a continuing review of the operations of the system on a regular basis. It reviews on a regular basis the programmes of the United Nations agencies in the field of the environment; this could include those relating to marine mammals. At one time it had a standing Sub-Committee on Marine Affairs, which, although now disbanded, could meet on an ad hoc basis.

(b) Inter-secretariat Committee on Scientific Programmes Relating to the Oceanography (ICSPRO). Members are senior staff of the United Nations, UNESCO, FAO, WMO, IMO. (Membership by UNEP in its own right is under consideration; staff have participated in all meetings). In addition, the Chairman of IOC participates; the Secretary of IOC serves as permanent secretary. ICSPRO implements the inter-agency agreement by which IOC is recognized as a "joint specialized mechanism" concerning marine research;

(c) Ecosystems Conservation Group (ECG). Composed of specialist staff representatives of UNEP, UNESCO and FAO, with representatives of IUCN. A relatively informal group for exchange of plans and views, in order to harmonize relevant activities of the organizations represented. ECG has held special meetings concerning conservation of marine ecosystems and it has been proposed that these become regular;

(d) International Co-ordinating Council of the Programme on Man and the Biosphere (MAB) under UNESCO. Responsible for two projects relevant to marine mammal conservation; Project 5 - Non-oceanic aquatic ecosystems and related interface zones; Project 7 - Islands: also Project 14 - Pollution; concerned with "biosphere reserves";

(e) Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP). Consists of specialists in their individual capacities nominated by the executive heads of several organizations of the UN system (including all those having any interest in marine mammals or their habitats) and a technical secretary from each supporting organization; administrative secretary provided by IMO. Advisory to the supporting organizations and to IOC. The group of technical secretaries provides an informal co-ordinating mechanism. Apart from the role of GESAMP in relation to the solution of technical aspects of marine pollution problems, which contributes to marine mammal conservation on the long-run, GESAMP provides a model for a common advisory/co-ordination mechanism which might be applicable to other fields.

## B. OTHER INTERGOVERNMENTAL ORGANIZATIONS (IGOs)

### 1. International Whaling Commission (IWC)

Established under the International Convention on Whaling (1946) to provide for the proper conservation of whale stocks and make possible the orderly development of the whaling industry. Regulates whaling on the basis of advice from its Scientific and Technical Committees, the former also reviews scientific knowledge about smaller cetaceans, and promotes, co-ordinates and evaluates the results of scientific research on whales for management purposes. The IWC sponsors the International Decade of Cetacean Research (IDCR) started about 1975, which was stimulated by Recommendation 33 of the United Nations Conference on the Human Environment.

### 2. International Council for the Exploration of the Sea (ICES)

The oldest of the regional marine scientific bodies; advisory to NEAFC and to IBSFC; members are European and North American countries; area is North Atlantic, especially eastern, and including Baltic Sea and Atlantic and Arctic Oceans. Has a Marine Mammals Committee dealing with advice on seals and cetaceans.

### 3. Northwest Atlantic Fisheries Organization (NAFO)

The successor to ICNAF. The scientific arm of this organization will provide advice on the setting of seal quotas for the coastal states concerned (Canada and Denmark/Greenland).

### 4. International North Pacific Fisheries Commission (INPFC)

This Commission has, since its creation under a Convention signed in 1952, been concerned mainly with the regulation of salmon fishing on the high seas. Protocol to amend this Convention provides for co-operative research on marine mammals, particularly Dall's porpoise, to determine the effect of the Japanese salmon fishery on marine mammal populations, and to reduce or eliminate the incidental catch of marine mammals in the North Pacific Ocean and Bering Sea through international agreements. Concerned also with possible competition between man and marine mammals for the same fish resources. An Ad Hoc Committee on Marine Mammals was established in 1979.

### 5. International Baltic Sea Fishery Commission (IBSFC)

Established under a convention of 1973 (in force since 1974). Information not available about concern for marine mammals, e.g., grey seals.

### 6. Inter-American Tropical Tuna Commission (I-ATTC)

Now being renegotiated or replaced in the light of 200-mile extensions. Has since 1975 been concerned with mortality of dolphins resulting from purse-seining for tuna in the eastern tropical Pacific, until then regarded as a national problem of the United States of America.

7. North Pacific Fur Seal Commission (NPFSC)

Co-ordinates research and advises on quotas for land take of N. Pacific fur seas by Canada, Japan, the USSR and the United States of America, pelagic sealing being prohibited. Concerned also with effects of pollution on seals.

8. Permanent Commission of the Conference on the Use and Conservation of the Marine Resources of the South Pacific (CPPS)

Has promulgated regulations for whaling in 200-mile zones of its members (Chile, Colombia, Ecuador, Peru), and could deal with all marine mammals in its area of responsibility. As from 1979, however, Peru and Chile joined IWC and hence accept its regulatory authority.

9. Antarctic Treaty

The consultative parties are recommending agreed measures for the conservation of Antarctic fauna covering all mammals excepting whales. So far these measures have included provisions on: (i) permits and especially protected species; (ii) harmful interference; (iii) especially protected areas; (iv) introduction of non-indigenous species, and (v) sites of special scientific interests.

10. Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)

This Convention, which entered into force in 1982 constitutes with the Antarctic Treaty a two-pronged system to promote the conservation of the Antarctic living marine resources. Although there are a number of differences in provisions and membership between the Treaty and the Convention, their essential conservational aims are similar and the Convention provides that two key Articles in the Antarctic Treaty shall be binding on contracting parties to the Convention.

The Convention is likely to have important consequences for the baleen whale populations of the Southern Hemisphere which feed principally on krill (Euphausia spp.) the commercial catch of which is to be regulated under the Convention. Other measures which might be provided for could affect the conservation both of the cetaceans and the pinnipeds of the area from the ice approximately to the Antarctic Convergence.

11. The Convention on the Conservation of Antarctic Seals

Negotiated by Antarctic Treaty Consultative Parties and open for accession by any states which may be invited to accede with the consent of the contracting parties, the Convention came into force in 1978; it provides for a variety of regulatory powers including protection of certain species. Scientific advice provided by SCAR.

12. International Commission for the Southeast Atlantic Fisheries (ICSEAF)

Has examined the problem of incidental catches of pinnipeds while purse-seining for fish, and the competition by these animals with man for commercial fishes.

13. Mixed Commission for Black Sea Fisheries (MCBSF)

Under this agreement between Black Sea coastal States, except Turkey, commercial dolphin capture by shooting and purse-seining have been prohibited.

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

In force since 1975, Secretariat administered by IUCN on behalf of UNEP. Appendixes list cetaceans, sirenians and pinnipeds regarding which trade is restricted or prohibited.

15. Commission established by the Agreement between Canada and Norway on Sealing and Conservation of the Seal Stock in the North-west Atlantic (1971).

16. Convention on Migratory Species of Wild Animals (CMSWA)

In force since 1983, interim secretariat provided by UNEP. Appendixes list cetaceans, pinnipeds and sirenians to be protected by range States and supplementary agreements.

C. MULTILATERAL AGREEMENTS UNDER REGIONAL ORGANIZATIONS

1. Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (1940)

The Secretariat is provided by the Organization of American States (OAS). Contracting Parties may agree to take a variety of measures, including establishment of parks and reserves, and adoption of laws and regulations for protection and preservation. A Meeting of Experts was convened in September 1977 under the above Convention on the "Conservation of Marine Mammals and their Ecosystems", the Report of which was submitted to the XXIII regular Meeting of the Inter-American Committee on Science and Technology (CICYT) in July 1978. The Report reviews states of populations and species in the Western Hemisphere, details responsibilities of various IGOs - all of which are included in this Appendix - and proposes priorities for research and for conservation action. The Inter-American Council of Education, Science and Culture (CIESC) has requested OAS to complete the Plan of Work proposed and which was approved in principle; and to consider the need now to convene a continental meeting on the subject.

2. The African Convention on the Conservation of Nature and Natural Resources

Negotiated under the auspices of the Organization for African Unity (OAU) and entered into force in 1969. While marine mammals are, in principle, covered by the Convention, the only action known yet to have been taken with respect to them is to place three species on Annex List (A) of the Convention, which provides for total protection. Provisions include regulation of hunting/fishing; traffic in products; public education; protected species listing; establishment of conservation areas.

3. South Pacific Commission

The Commission has carried out some activities connnected with fisheries and marine ecosystems, in which attention has occasionally been given to marine mammals.

4. The European Economic Community (EEC)

The Community holds a special place among the IGOs because it acts in some respects as a "supra-national" authority. In 1983 the EEC established a common fisheries policy, which may have some implications for marine mammals in its area of interest.

In 1981, the Council of Ministers of the EEC adopted a Regulation on common rules for import of whales or other cetacean products. Under the Regulation, a Committee on Cetacean Products was set up to examine the implementation of the Regulation.

In 1983, the Council adopted a Directive by which Member States were required to take measures not to import commercially skins off certain seal pups and products derived from them. The Directive, which came into force on 1 October 1983, will remain in force until 1 October 1985 unless the Council decides otherwise.

5. The Council of Europe

The Council of Ministers and the Committees for Fisheries and for the Conservation of Nature and Natural Resources have concerned themselves with the conservation of living marine resources both in the North-east Atlantic and the Mediterranean Sea, and occasionally with marine mammals. A number of agreements relate to animals in captivity, especially live animals being moved across frontiers. Of these the most relevant is the European Convention for the Protection of Animals During International Transport (1968). It entered into force in 1971, is open to member States of the Council of Europe and others invited to accede. Marine mammals are covered by the fourth category of animals established - "Other mammals and birds" under which there are special provisions for wild animals.

The Convention on the Conservation of European Wildlife and Natural Habitat was adopted under the aegis of the Council of Europe. In force since 1982, Secretariat provided by the Council of Europe. Appendixes list cetaceans, pinnipeds and mustelidae as protected or strictly protected fauna species.

D. INTERNATIONAL NON-GOVERNMENTAL ORGANIZATIONS (INGOs)

1. International Union for the Conservation of Nature and Natural Resources (IUCN)

IUCN is a union of sovereign States, governmental agencies and NGOs concerned with the initiation and promotion of scientifically-based action that will ensure the perpetuation of man's natural environment. Its goal is to promote action directed toward the sustainable use and conservation of natural resources. The IUCN plan and programme are based upon themes drawn from one of IUCN's key publications - the World Conservation Strategy.

The Species Survival Commission (SSC) is one of the six IUCN commissions, and specializes in the provision of advice on species, their status, needs and management. It gives advice on marine mammals and contains four groups dealing with marine mammals: the Seal Specialist Group, the Whale Specialist Group, the Sirenia Specialist Group and the Otter Specialist Group. Each group comprises a network of scientific expertise on the appropriate species co-ordinated by a Chairman and assisted by the SSC Executive Officer at IUCN Headquarters in Gland, Switzerland. This expert network has given rise to the Conservation Monitoring Centre (CMC) based in England (Cambridge and Kew), which is a data base on species, their status and needs, including marine mammals.

The Commission on Environmental Planning, Law and Administration (CEPLA) has drawn on its network of legal and planning expertise and has recently produced two publications: "Legal Measures for the Conservation of Marine Mammals" and "The Environmental Law of the Sea".

At its fifteenth session (1981), the IUCN General Assembly established policies regarding large and small cetaceans, the Convention on the Law of the Sea, deep sea mining and establishment of protected areas of the deep ocean, environment management of the South Pacific, preservation of the Great Barrier Reef, the Antarctic environment and the Southern Ocean. Affairs concerning Antarctica are dealt with by a Sub-Committee of the IUCN Council and by an Advisory Group on Antarctica with its own co-ordinator.

Whilst formally an INGO, IUCN is unique among such organizations in having many States as members, as well as government agencies. It is also a member of the Ecosystems Conservation Group together with UNESCO, FAO and UNEP.

2. World Wildlife Fund (WWF)

Funds and executes many projects concerning marine mammals under its marine campaign "The Seas Must Live"; international marine programme executed mainly with technical advice of IUCN. National Appeals of WWF (especially U.S.A., Netherlands, U.K., Italy) also have relevant activities.

3. International Council of Scientific Unions (ICSU)

Although in principle several of the constituent unions and associations, in particular the International Association for Biological Oceanography (IABO), could be concerned, in practice only the International Association for Ecology (INTECOL) has been involved, and that only marginally. The Scientific Committees for Antarctic Research (SCAR) and for Oceanic Research (SCOR) are more deeply involved, especially the former. SCOR is one of the scientific advisory bodies to IOC. SCAR initiated, following initiatives under the Antarctic Treaty (concerning which, it is the Scientific Advisory Body) a comprehensive research programme, Biological Investigations of Marine Antarctic Systems and Stocks (BIOMASS). BIOMASS is now a jointly sponsored programme of SCOR, SCAR and FAO/ACMRR and includes studies related to marine mammals and their environment; studies are planned and co-ordinated through a joint working group of specialists including representation also from the International Association for Biological Oceanography (IABO) an affiliate of ICSU/IUBC.

SCAR also maintains a working group on Antarctic Seals, which performs advisory functions with respect to the Convention on the Conservation of Antarctic Seals (see B.11).

4. Bureau of International Whaling Statistics (BIWS)

Officially recognized as the body responsible for statistical provision to IWC; maintained by Government of Norway. From June 1984 the task performed by BIWS will be taken over by IWC.

## Appendix 3

### LIST OF ABBREVIATIONS

| | |
|---|---|
| ACC | Administrative Committee on Co-ordination (UN) |
| ACMRR | Advisory Committee of Experts on Marine Resources Research (FAO) |
| ACORM | Advisory Committee on Oceanic Meteorological Research (WMO) |
| AFCONA | African Convention on the Conservation of Nature and Natural Resources |
| ASFIS | Aquatic Sciences and Fisheries Information System (FAO/IOC) |
| BIOMASS | Biological Investigation of Marine Antarctic Systems and stocks |
| BIWS | Bureau of International Whaling Statistics |
| BWU | Blue Whale Unit |
| CARPAS | Regional Fisheries Advisory Commission for the Southwest Atlantic |
| CECAF | Committee for the Eastern Central Atlantic (FAO) |
| CCAMLR | Convention on the Conservation of Antarctic Marine Living Resources |
| CEE | Centre for Environmental Education |
| CICYT | Inter-American Committee on Science and Technology (OAS) |
| CIESC | Inter-American Council of Education, Science and Culture (OAS) |
| CITES | Convention on International Trade in Endangered Species of Wild Fauna and Flora |
| CMC | Conservation Monitoring Centre (IUCN) |
| CMSWA | Convention on the Conservation of Migratory Species of Wild Animals |
| COFI | Committee on Fisheries (FAO) |
| CPPS | Permanent Commission of the Conference on the Use and Conservation of the Marine Resources of the South Pacific |
| DDT | Dichloro-diphenyl-trichloro-ethane |

| | |
|---|---|
| ECG | Ecosystem Conservation Group (UNEP/FAO/UNESCO/IUCN) |
| ECOR | Engineering Committee on Oceanic Resources |
| EEC | European Economic Community |
| EEZ | Exclusive Economic Zone |
| FAO | Food and Agriculture Organization of the United Nations |
| GC | Governing Council |
| GESAMP | Joint Group of Experts on the Scientific Aspects of Marine Pollution (IMCO/FAO/UNESCO/WMO/WHO/IAEA/UN) |
| GFCM | General Fisheries Council for the Mediterranean (FAO) |
| GIPME | Global Investigation of Pollution in the Marine Environment (SCOR/ACMRR/ACORM/ECOR/ICES/GESAMP) |
| IABO | International Association of Biological Oceanography (IUBS) |
| IAEA | International Atomic Energy Agency |
| I-ATTC | Inter-American Tropical Tuna Commission |
| IBP | International Biological Programme |
| IBSFC | International Baltic Sea Fishery Commission |
| ICCAT | International Commission for the Conservation of Atlantic Tunas |
| ICES | International Council for the Exploration of the Sea |
| ICJ | International Court of Justice |
| ICSEAF | International Commission for the Southeast Atlantic Fisheries |
| ICSPRO | Intersecretariat Committee on Scientific Programmes Relating to Oceanography (UN/UNESCO/WMO/FAO/IMCO/IOC) |
| ICSU | International Council of Scientific Unions |
| IDCR | International Decade of Cetacian Research (IWC) |
| IDOE | International Decade of Ocean Exploration (UNESCO) |
| IGO | Inter-Governmental Organization |
| IIED | International Institute for Environment and Development |
| IMO | International Maritime Organization |
| INFOTERRA | International Referral System for sources of environmental information (UNEP) |

| | |
|---|---|
| INGO | International Non-Governmental Organization |
| INPFC | International North Pacific Fisheries Commission |
| INTECOL | International Association of Ecology (ICSU) |
| IOC | Intergovernmental Oceanographic Commission (UNESCO) |
| IODE | International Oceanographic Data Exchange (IOC) |
| IOFC | Indian Ocean Fisheries Commission (FAO) |
| IOI | International Ocean Institute |
| IPFC | Indo-Pacific Fishery Commission (FAO) |
| IUCN | International Union for the Conservation of Nature and Natural Resources |
| IWC | International Whaling Commission |
| JCBSF | Joint Commission for Regulation of Fishing in the Black Sea |
| LEPOR | Long-term Expanded Programme of Ocean Exploration and Research (UNESCO) |
| MAB | International Co-ordinating Council of the Programme on Man and the Biosphere (UNESCO) |
| MAP | Mediterranean Action Plan |
| MCBSF | Mixed Commission for Black Sea Fisheries |
| MEDI | Marine Environmental Data and Information Referral System |
| MSY | Maximum Sustainable Yield |
| NAFO | Northwest Atlantic Fisheries Organization |
| NCC | Nature Conservancy Council (UK) |
| NEAFC | North-East Atlantic Fisheries Commission |
| NGO | Non-Governmental Organization |
| NPFSC | North Pacific Fur Seal Commission |
| OAS | Organization of American States |
| OAU | Organization of African Unity |
| PCBs | Polychlorinated biphenyls |
| PPAG | Programme and Policy Advisory Group (IUCN) |

| | |
|---|---|
| SCAR | Scientific Committee on Antarctic Research (ICSU) |
| SCOPE | Scientific Committee on Problems of the Environment (ICSU) |
| SCOR | Scientific Committee on Oceanic Research (ICSU) |
| SPC | South Pacific Commission |
| SSC | Species Survival Commission (IUCN) |
| UNCLOS | United Nations Conference on the Law of the Sea |
| UNEP | United Nations Environment Programme |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNGA | United Nations General Assembly |
| WECAFC | Western Central Atlantic Fishery Commission (FAO) |
| WMO | World Meteorological Organization |
| WWF | World Wildlife Fund |
| WCS | World Conservation Strategy |
| WDCs | World Data Centers |
| WTMU | World Trade Monitoring Unit |

## B. DRAFT FINANCIAL PLAN

### SUMMARY AND COSTING OF PROJECTS IN SUPPORT OF THE PLAN OF ACTION

| | | |
|---|---|---|
| MM 1 R | Review of harvesting operations on marine mammals which are not under international control | US$ 40,000 |
| MM 2 R | Determination of safe catch limits for Marine mammals and scientific sampling in protected areas | US$ 100,000 |
| MM 3 R | Assistance to developing countries in training of additional marine mammal scientists and in the protection of threatened marine mammal populations | US$ 1,150,000 |
| MM 4 R | International co-ordination and support for the FAO/UNEP Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals | US$ 340,000 |
| MM 5 R | Development of information systems and research capacities to support conservation - based management practices for large cetaceans | US$ 3, 83,500 |
| MM 6 R | Development of information systems and research capacities to support conservation - based management practices for small cetaceans | US$ 2,687,000 |
| MM 7 R | Development of information systems and research capacities to support conservation - based management practices for pinnipeds, sirenians and some otters | US$ 4,246,000 |
| MM 8 R | Legal aspects of marine mammal conservation | US$ 95,000 |
| MM 9 R | Examination of means of increasing public awareness of Marine Mammals | US$ 100,000 |
| | Total cost for 1984-1985 | US$11,842,000 |

Potential donors: All countries with an interest in the conservation, management and utilization of marine mammals.

| | |
|---|---|
| Title of project: | Review of harvesting operations on marine mammals which are not under international control |
| Project proposal No: | MM 1 R |
| Subject area: | Living marine resources |
| Geographical scope: | Global |
| Implementation: | FAO |
| Duration of project: | 1 year |
| Cost of project: | US$40,000 |

Objectives

Acquisition of data on commercial and subsistence harvesting operations where carcasses of marine mammals are utilized, in order to determine the extent to which marine mammal populations are currently being killed in the course of human activities. The data will be used to develop more effective legislation, at both national and international levels, for the protection of marine mammals. The project is restricted to data collection on operations which are not under international control.

Background

A preliminary report covering world catches of marine mammals 1966-1975 was prepared by three scientists supported by the Marine Mammals Commission USA. The report contains data on catches of cetaceans, pinnipeds, sirenians, marine mustilids and polar bears, as well as on stock distribution, population size, and a suggested management programme.

Essential information about operations under international control is largely available for large cetaceans under IWC, and for North Pacific fur seals under NPFSC. This study is limited therefore to small cetaceans and other marine mammals.

Activities and workplan

This project is to be undertaken by a consultant whose work will fall into three main phases:

(a) Review of existing information;

(b) Field surveys in areas where the initial review suggests that significant harvesting of marine mammals is taking place but quantitative data are inadequate;

(c) Collation of results and preparation of report.

It is estimated that about four months working time would be required on this project.

Phase (a) would probably take about one month. During this time the consultant would need to visit organizations where relevant data are stored (e.g. FAO and IUCN) and to consult extensively with appropriate experts (probably mainly in Europe and North America) both by correspondence and by personal visits. Some travel would therefore be involved. During this time he/she would be assessing the information leading to identification of the countries and areas in which field surveys would be necessary. On this basis he/she will be able to develop the necessary travel plans.

A period of three months is tentatively allowed for the field phase. This would certainly not allow investigation of all areas in which inadequately known taking of marine mammals is believed to occur. It should, however, provide for coverage of the most significant localities. Much of this work will probably have to be undertaken in tropical developing countries, and it could well take in South East Asia, Africa and South America. Some visits to developed countries where commercial harvesting occurs may also be desirable. It would not be wise to specify too precisely the countries to be visited until the consultant has embarked on phase (a) of the study.

Phase (c), the writing up of the results, will probably require about one month's work. However, it will probably extend over a considerably longer period since the consultant may have to wait for information flowing into him from local sources as a result of enquiries he has initiated during his visit. A period of up to 9 months could be required for this phase, making a total duration of 12 months for the project.

Output

A report covering all species of marine mammals of which catches are not under international control.

Use of output

This information on a species by species basis is needed to assist in identifying those species and populations which are most seriously threatened and should therefore be given priority in promoting specific urgent measures which are needed for their protection. The information obtained from this survey will also serve, when analysed in another way, to identify the kinds of activities most threatening to marine mammals and the human situations in which they occur. The resulting data will form essential input for project MM 8 R, aimed at developing more effective and consistent legal systems and procedures, at both national and international levels, for the protection of marine mammals.

| | |
|---|---|
| Title of project: | Determination of safe catch limits for marine mammal populations and scientific samplings in protected areas |
| Project proposal No: | MM 2 R (Replaces MM 4 and MM 5) |
| Subject area: | Living marine resources |
| Geographical scope: | Global |
| Implementation: | FAO |
| Duration: | 9 months |
| Cost of project: | US$100,000 |

Objectives

1. To provide a basis for decisions by Governments and international regulatory bodies as to safe catch levels to be set for exploited populations, particularly in situations where a degree of uncertainty attaches to the estimates of the sizes of the populations concerned, and the degree of uncertainty may itself be uncertain.

2. To convene a workshop aimed at providing the widest forum possible for descussion of the extent to which it is permissible to remove animals from a protected area, without affecting the overall population of the community.

Background

The determination of the number of animals which can be taken on a continuing basis is vital to attempts to manage the exploitation of marine mammal populations, and it is also critical to deciding on appropriate action in cases where populations are subject to incidental or other non-harvesting mortalities. While great advances have been made in developing the underlying theory of population dynamics and in estimating the parameters involved (e.g. population size and vital rates), all these estimates and the recommendations for action derived from them still involve substantial uncertainties. In a few cases (e.g. the recommendations of the Scientific Committee of IWC relating to Bering Sea bowheads an Antarctic mink whales) it is now becoming possible to make quantitative statements relating to the level of risk that a particular catch level could bring about an undesired decline in the stock. Determination of the level of risk that is acceptable is a management decision which may involve a variety of factors, economic, social and political, as distinct from the biological and mathematical studies needed to attempt to estimate the risk factors.

In most recent attempts (e.g. the IWC New Management Procedure and the United States Marine Mammal Act) to lay down rules relating the permitted take of marine mammals to the relative size of the population a target level is defined which bears a close relation to the level giving maximum gross recruitment. Any such policy, based on adequate scientific knowledge, will almost certainly obviate any risk of a population moving towards extinction. There is however, great cause for concern when animals of sufficient size are

being killed in populations which have been reduced to much lower levels, since below a certain level recruitment processes may break down in some way so that populations may move towards extinction even without any destruction by man. This problem is recognized for example by the IWC in its new (1982) policy regarding aboriginal subsistence whaling, which requires the setting of a "certain minimum level" below which no catch may be taken.

The evidence regarding critical levels is conflicting and the Scientific Committee of IWC, for example, has been quite unable in 1983 to advise the Commission on what should be the "certain minimum levels" for any stocks. Different kinds of animals have shown different responses when reduced to low levels. Some have recovered rapidly, e.g. Antarctic fur seals, from a few hundred in 1900 to about 900,000 today (about 14% per year), and North East Pacific grey whales from 1,300 in 1870 to 16,000 now (3.7% per year). Other populations, such as some right whale stocks, have shown almost no recovery after being reduced to very low levels in the last century or earlier. Some possible biological reasons for these differences can be proposed, but cannot be verified. Thus the uncertainty attaching to statements about minimum safe population levels is not only much greater than that relating to safe catch levels for stocks near the optimum, but also virtually impossible to quantify at present.

In the case of cetaceans, and particularly large whales, there is a need to build up further knowledge of how the animals respond, particularly in their reproductive performance, to changing population levels. This information is essential if whales are to be regarded as potential resources if exploitation can be properly managed. Of particular importance is to know more about what happens when populations are rebuilding, or being given the opportunity to rebuild, when protected from exploitation, as for example in a sanctuary. Unfortunately, some of the information needed, e.g. on pregnancy rates, age at maturity, growth rate, etc., can at present only be obtained by killing a sample of animals, and it is unlikely that this situation will change in the foreseeable future.

Activities and workplan

1. This project proposes a background study dealing with the ways in which the uncertainties attached to estimates of both sustainable catch levels and safe minimum population levels can be presented so as to enable management decisions on catch limits and related matters to be based on the best possible appreciation of the risks attaching to alternative causes of action. This study would review work already done in this field as regard not only marine mammals but also in other management areas where similar problems arise. On the basis of this study it would attempt to develop principles and procedures which could provide a basis for further work.

2. A preliminary agenda for the workshop on scientific sampling in protected areas might include the following matters:

(a) The objects of sanctuaries;

(b) Purposes for which information potentially obtainable by taking animals is required;

(c) Numbers, species and types (e.g. sex and age) required for data purposes;

(d) Alternative ways of collecting essential data;

(e) Possibility of obtaining data outside sanctuaries;

(f) Management solutions:

(i) Sub areas within sanctuary;

(ii) Limitations on number and kind of catch.

This workshop is provisionally planned for the second half of 1985, in order to allow time to make the physical arrangements, select the participants and arrange for the background documents. Both IWC and IUCN have direct interests in this problem, and it would be appropriate to invite them to co-sponsor the workshop.

The participants would have to bring a wide range of interests and knowledge to the meeting and an attendance of about 10-12 would probably provide wide enough coverage while promoting effective discussion. Participants should be chosen for the point of view they represent, as well as their expertise. They should include those interested in sanctuaries from the "protection" viewpoint as well as those seeing marine mammals as potential resources when properly managed. They should include experts in whale biology, in population dynamics and in benign research on cetaceans. Interests in the social aspects of sanctuaries could also be represented. It would, however, be desirable to take care in planning the workshop that remains within its specific terms of reference i.e., scientific sampling of marine mammals in sanctuary areas, and does not stray over into general aspects of sanctuary management.

Outputs

1. A report which would be of value to Governments and regulatory international bodies, such as IWC, in making decision as to catch limits;

2. The formulation of specific decisions on principles for scientific sampling in protected areas.

Use of outputs

Guidelines regarding sustainable catch limits for marine mammals.

Remarks

The conduct of the review would require a scientist with:

1. A good knowledge of population dynamics as applied to marine mammals;

2. An understanding of stochastic processes and risk analysis;

3. General knowledge of the practical problems which actually arise in the management of marine mammals.

| | |
|---|---|
| Title of project: | Assistance to developing countries in training additional marine mammal scientists and in the protection of threatened marine mammal populations |
| Project proposal No: | MM 3 R (Replaces MM 4a and MM 10) |
| Subject area: | Living marine resources |
| Geographical scope: | Global |
| Implementation: | Designated laboratories under the supervision of the Ad Hoc Planning and Co-ordinating Committee |
| Duration of project: | 2 years (initially) |
| Cost of project: | US$ 1,150,000 |

Objectives

1. To enable developing countries to take whatever steps may be necessary to ensure the survival of threatened marine mammal populations within their jurisdiction.

2. To train additional marine mammal scientists, especially in developing countries.

Background

Many of the most urgent situations affecting marine mammal populations, particularly in coastal and inland waters, are to be found in developing countries. These situations arise from a variety of causes, of which the most important fall into the categories of uncontrolled, or inadequately controlled, killing for subsistence or other reasons, disturbance of breeding populations, and damage to habitats. Remedial measures required include more appropriate legislation, better enforcement, education of local people and compensation or assistance in finding alternative subsistence where it is of necessary to modify the way of life of local people. In many instances the effectiveness of attempts to improve the conservation of marine mammals may be dependent on the willing co-operation of the local people. Where the traditional activities of a community involve the killing, deliberately or accidentally, of marine mammals, or disturbance of breeding areas, they will be reluctant to change these practices even under legal or financial pressure unless they can be convinced not only that what they are doing is harmful to the mammal populations, but also that there are valid reasons for protecting them. An important aspect of many programmes to increase public awareness of marine mammals should therefore be to undertake activities aimed directly at local people, particularly in developing countries, whose day to day activities have direct impacts on marine mammals. This would involve campaigns extremely different from those directed in a widespread manner to the peoples of developed countries. Project MM 9 R is a proposal for a major workshop on means of increasing public awareness of marine mammals. It is important that consideration of ways in which appropriate information can be disseminated directly to people in contact with marine mammals in developing countries should be a major feature of this review.

Nearly all active marine mammal scientists are based in the developed countries. This lack of balance is only slightly offset by the fact that a number of them frequently carry out projects in the waters of developing countries. The imbalance is even more serious when seen in the light of the above mentioned acute conservation problems relating to marine mammals which are occurring in developing countries. Two ways of attacking the problem have been identified:

(a) By providing full time training in marine mammal work at appropriate institutions for junior scientists from developing countries;

(b) By providing ad hoc training in specific aspects of marine mammal work as opportunity offers.

Activities and workplan

In response to the letter to Governments of 10 October 1983 about the Global Plan of Action, UNEP has received a number of requests from developing countries for assistance in conservation activities regarding marine mammals. More requests are expected in the future. The proposals received will be collated, reviewed and presented to potential donors for consideration under the present project.

The training of local scientists in connection with the technical assistance programme will take two forms:

(a) Selected young graduates from developing countries will undergo formal training at institutions with special capabilities in marine mammal research. This training should be of 2 years duration leading to an MSc degree. Ten man-years of training per year are proposed for the first two years of the Plan;

(b) The ad hoc training scheme would have to operate on a much more flexible basis than the formal training. Special short term training in a particular area or field of marine mammal research may be involved. Participation in short courses or workshops on particular subjects and the participation in cruises or expeditions in the area. A standing allocation of funds with as much flexibility as possible is proposed.

The secretariat to be established under the Plan may serve as a clearing house for requests and offers of training.

Output and use of output

Trained qualified scientists in developing countries and reports with evaluations of threats to marine mammal populations in developing countries, for use in the protection of threatened populations.

| | |
|---|---|
| Title: | International co-ordination and support for the FAO/UNEP Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals |
| Project proposal No: | MM 4 R (Replaces MM 8, 16, 17, 18) |
| Subject area: | Living marine resources |
| Geographical scope: | Global |
| Implementation: | Interagency Planning and Co-ordination Committee for FAO/UNEP Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals |
| Duration: | 2 years |
| Cost of project: | US$ 340,000 |

Breakdown of cost:

| | |
|---|---|
| Ad Hoc Advisory Committee of Scientists | US$ 65,000 |
| Ad Hoc Interagency Co-ordination Committee | US$ 85,000 |
| Provision of Secretariat for the Plan | US$105,000 |
| Review Meeting | US$ 85,000 |

Objectives

1. To activate the planning and co-ordinating machinery essential to proper implementation of the Action Plan.

2. To provide advice to the ad hoc interagency consultation on scientific aspects of the development of the Plan.

3. To provide a focal point for implementation of the Plan.

4. To review progress in the implementation of the Plan and develop a programme of activities to be implemented after the first biennium.

Background

A. The need for immediate scientific advice to the Plan became obvious during the last interagency consultation on the Plan (Rome, 11-13 January 1984). The Consultation agreed that it was beyond its competence to suggest priorities between the various research proposals and recommended that the Ad Hoc Advisory Committee of Scientists, to be established under Recommendation 18 of the Plan, should be formed as soon as possible.

It is proposed that the Committee be composed of not more than eight members, selected on the basis of their personal broad scientific competence and judgement following a number of criteria such as:

(a) Taxonomic specialization, e.g. large cetaceans, small cetaceans, seals, sirenians;

(b) Field of discipline, e.g. traditional biology, population dynamics, benign research;

(c) Basic conservation interests, e.g. protective, resource utilization;

(d) National groupings.

The Committee will be selected in consultation with IWC, IOC/UNESCO, IUCN and other bodies with expertise in scientific aspects of marine mammal conservation.

B. Ad Hoc planning and co-ordinating consultations have taken place between representatives of FAO, UNEP, UNESCO/IOC, IWC, CITES, SCAR and IUCN, to review progress under the Plan and to develop a schedule of projects to be submitted to the appropriate governing bodies of FAO and UNEP. Two consultations have taken place so far and it was agreed during the last consultation that funds had to be allocated for this activity if the implementation of the Plan was to be effective.

C. A focal point for the Plan in form of a secretariat is considered a necessity, especially in order to co-ordinate the numerous research projects to be implemented by designated laboratories and national scientists under the supervision of the Ad Hoc Advisory Committee of Scientists.

D. Towards the end of the first biennium a review meeting among involved parties is envisaged in recommendation 38 of the Plan. Participants in this meeting will be members of the ad hoc Interagency Co-ordination Committee, members of the Ad Hoc Advisory Committee of Scientists and delegates nominated by individual Governments.

Activities and workplan

1. Establishment of a co-ordinating secretariat and an ad hoc advisory committee of scientists panel. These two bodies are to prepare detailed annual work plans of activities;

2. Planning and servicing meetings of the two ad hoc bodies;

3. Arranging appropriate scientific and technical workshops and meetings;

4. Publishing statements and information materials.

Output

Scientific review and publications. Reports of consultations. Programme of action for implementation after the first biennium.

Use of output

Proper implementation of the Plan.

| | |
|---|---|
| Title of Project: | Development of information systems and research capacities to support conservation - based management practices for large cetacians |
| Project proposal No: | MM 5 R (Replaces MM 9/AR (1)) |
| Subject Area: | Living marine resources |
| Geographical scope: | Global |
| Implementation: | Designated laboratories and national scientists under supervision of the Ad Hoc Advisory Committee of Scientists |
| Duration: | 2 years |
| Cost of project: | US$3,083,500 |

Objectives

To establish a comprehensive programme of research activities on large cetaceans to increase knowledge, particularly of population dynamics and reproductive response to varying levels of populations and human interference with the marine ecosystems, in order to permit the establishment of appropriate management strategies. This information is essential for protection measures, particularly if sanctuaries are to be established and legal protection regimes proposed.

Background

At the 34th meeting of the International Whaling Commission a decision was taken for a moratorium on commercial whaling for a trial period commencing in 1986. Any other decisions by Governments would need to be based on sound scientific information and data. Information is needed on two broad areas: population dynamics with special reference to relation of marine mammals to and their effects on other elements of their environment and harvesting operations on marine mammals not under international control. Improvement in statistics reporting and of information systems, including the creation of data banks would facilitate the setting of management guidelines and strategies. Though increased cetacean research was called for by the United Nations Conference on the Human Environment in 1972 and comprehensive proposals were put foward in 1974 and adopted in 1975 under the IWC's IDCR programme, activities on sufficient levels to make significant broad impacts have yet to be launched. The Scientific Consultation on the Conservation and Management of Marine Mammals convened by FAO and UNEP in Bergen, Norway in 1976 strongly deplored this unsatisfactory situation and urged that this activity be made a cornerstone of the future Plan of Action for Marine Mammals. Recommendations 18 and 19 in the Plan give effect to this activity. Priority will be placed on endangered and unknown species, and those under managed exploitation.

Activities and workplan

Specific activities to be implemented under this project are described in detail in the report: "IWC Working Group on Cetacean Proposals for the FAO/UNEP Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals; La Jolla, California, 31 October - 3 November 1983". This working group identified 28 projects for large cetaceans. The 23 projects which were assigned priorities "very high" and "high", with a total cost of US$3,083,500, are considered for implementation in 1984/1985. The report is available, for reference purposes.

Output and use of output

A number of reports to be used for the global management of large cetaceans.

| | |
|---|---|
| Title of project: | Development of information systems and research capacities to support conservation - based management practices for small-cetaceans |
| Project proposal No: | MM 6 R (Replaces MM 9/AR/(2)) |
| Subject area: | Living marine resources |
| Geographical scope: | Designated laboratories and national scientists under supervision of the Ad Hoc Advisory Committee of Scientists |
| Duration: | 2 years |
| Cost of project: | US$2,687,500 |

Objectives

To establish a comprehensive programme of research activities on small cetaceans in order to obtain data and information essential to enlightened conservation and management of these sea mammals. Such studies would pay attention to the level of risk acceptable in proposed management strategies.

Background

Until recently little attention has been paid to the conservation of the smaller cetaceans, probably because few serious threats to them were apparent. IWC does not accept that its responsibilities include management of the small cetaceans; consequently the Scientific Committee is limited to report to the Commission the information it has regarding the status of these stocks. Many of these species occur largely within national jurisdications, and a number of nations usually enter reservations when adopting this part of the report of the Scientific Committee at the Commission meeting.

Probably, fishermen have always perceived these animals as serious nuisances to them because they are competing for the fish stocks from which they derive their livelihood. This conflict has become much more intense in recent times with the expansion of the world's commercial fisheries. Incidental or accidental kills due to interference with commercial fisheries operations are now a problem in the coastal areas and on the high seas.

New low-consumptive and non-consumptive values associated with watching these animals in their natural environment or in oceanaria are now adding to this conflict. A conference on this topic was held in Boston, Massachusetts in June 1983. The differences of economic interests among groups and nations described here led to conflicts. Resolution of such conflicts, as well as harmonious realization of the different values, calls for research to establish the facts, and for public awareness of the facts and of the limited number of intergovernmental arrangements available for dealing with these problems.

Activities and workplan

See background document: "IWC - Working Group on Cetacean Proposals for the FAO/UNEP Global Plan of Action for the Conservation, Management and Utilization of Marine Mammals; La Jolla, California, USA, 31 October - 3 November 1983".

Output and use of output

A number of reports to be used for the global management of small cetaceans

| | |
|---|---|
| Title of project: | Development of information systems and research capabilities to support conservation - based management practices for pinnipeds, sirenians and some otters |
| Project proposal No: | MM 7 R (Replaces MM 9/AR/(3)) |
| Subject area: | Living marine resources |
| Geographical scope: | Global |
| Implementation: | Designated laboratories and national scientists under supervision of the Ad Hoc Advisory Committee of Scientists |
| Duration: | 2 years |
| Cost of project: | US$4,246,000 |

Objectives

To establish a comprehensive programme of research activities on pinnipeds, sirenians and otters to improve the scientific basis of conservation and management. Such studies should yield improved knowledge of population dynamics, stochastic processes and risk analysis, and practical knowledge of problems associated with management of sea mammals.

Background

Many pinnipeds like small cetaceans, also interfere with fisheries. The damage to fishing gear caused by seals may, as a first approximation, show to be linearly related to the abundance of animals. However, this interference is only a symptom of what may prove to be a more complex and more significant interrelationship between population dynamics and behaviour of both fish and mammals. In order to be effective, sound management of these marine mammals needs to be based on specific knowledge of the extent of interaction. Many of the larger populations of seals, including the fur seals, which have been depleted in the past, have recovered under successful management.

Activities and workplan

Specific activities to be implemented under this project are described in detail in the report:

"PROJECT PROPOSALS FOR FAO/UNEP DRAFT GLOBAL PLAN OF ACTION FOR THE CONSERVATION, MANAGEMENT AND UTILIZATION OF MARINE MAMMALS: SEALS - SIRENIANS - OTTERS" 3/ IUCN - 1984

Output and use of output

A number of reports and management guidelines for the sound management of pinnipeds, sirenians and otters.

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3/ Available for reference.

Title: Legal aspects of marine mammals conservation

Project proposal No: MM 8 R (Replaces MM 12, MM 13, MM 14)

Subject area:

Geographical scope: Global

Implementing organization: FAO

Duration: 2 years

Cost of project: US$95,000

Objectives

To assist Governments, on request, in drafting appropriate national legislation for the conservation of marine mammals. To study the legal problems associated with the establishment of protected areas both within national jurisdiction and on the high seas. To develop proposals for a comprehensive review of the laws relating to marine mammals.

Background:

The assistance component of the project arises from sub-paragraphs (b) and (e) of Recommendation 23. These proposals, which were supported by the Consultation, call upon the United Nations and its specialized agencies to (b) assist nations, on their request, in preparing any actions which may be desirable, and in accordance with international law and practice, for the conservation of marine mammals in waters under their jurisdiction and with respect to their nationals and vessels, and; (e) assist governments, on their request, in drafting appropriate national legislation.

Regarding the second project component, Recommendation 28 of the Draft Plan proposes legal studies of several specific matters relating to the conservation of marine mammals. The Consultation agreed to give highest priority in this area to a study of legal problems associated with the establishment of protected areas for cetaceans. It was further agreed that this matter should be studied by a small expert working group to meet early in 1984.

In consideration of this question, a major distinction has to be made between protected areas within national jurisdiction and those which have been or may be established in international waters. Areas within national jurisdiction in which marine mammals are protected are now numerous and extensive; they may include complete protection within the entire EEZ (e.g. New Zealand and the United States of America). In those cases there is presumably little limitation on the power of the coastal State to enact any protective measures it sees fit. There are however certain difficult problems, generally involving conflicts of interest in the community, in which formulation of principles which may give guidance to countries in laying down their national legislation would be of value. These may include, for example, the regulation of fisheries which may cause incidental kills, conflicts with

fishermen who consider the mammals interfere with their livelihood, regulation of live capture for public display, control of disturbance, particularly of breeding animals, either on land or by vessels engaged in ordinary passage or in whale watching. These matters are however only marginal to the problems of protected areas, since legislation dealing with them could be equally applicable inside or outside such areas. The proposed workshop could usefully devote some time to these questions, but it is likely that a major part of its concern will be with the more difficult legal problems associated with protected areas on the high seas.

At present it appears that there are no mechanisms by which protected areas can be established on the high seas in a form which makes them universally applicable. The IWC has established a "sanctuary" in the Indian Ocean down to 55 S, but this is limited by the fact that it is only binding upon member nations of the IWC, and applies only to commercial whaling. It is questionable in fact whether the establishment of this "sanctuary" has prevented the taking of any whales which would have been taken in its absence. In an alternative approach to the problem, certain countries (e.g. Australia and the United States of America) have prohibited, with minor exceptions, the taking of marine mammals by their nationals anywhere in the world. Such an approach, within specified areas, might provide a means of making high seas sanctions more widely applicable, but it may not be possible under some legal systems. One major topic for a workshop on protected areas for marine mammals should therefore be that of possible mechanisms for the establishment of protected areas on the high seas. Proponents of the maximum effective use of protected areas will probably wish to promote discussion of the possibility of instituting protective measures within high seas sanctuaries additional to the banning of harvesting. There may be a wish for discussion of the practicability of regulating, perhaps within especially critical areas, such activities as fisheries which cause incidental kills and adversely affect the food of mammals, or the passage of vessels through breeding areas at certain times. The question of scientific sampling in sanctuaries will also be relevant to this broader discussion.

The above project components are designed to deal in the near future with legal aspects of immediate importance in relation of identified problems. The complexity of the legal problems relating to the conservation of marine mammals as a whole is however such that there is need for an in-depth study of the entire situation at a high level of technical competence. A valuable step in this direction was made at a privately organized study, supported by CEE, which was held in France in December 1979. This needs to be followed up by a carefully-prepared review of the whole field as a specific component of this Plan. Development of terms of reference and an agenda for this study would require careful consideration, and it would also be necessary to prepare background documents. The study should take the form of a workshop and careful consideration would have to be given to the selection of the participants; in order to ensure a well-balanced outcome the participants should, in addition to having a high level of technical competence, be widely representative of the interests and points of view concerned with marine mammals. To enable sufficient time to be given to these preparations and to make available the results of the project already mentioned the Consultation

agreed that activity in the first biennium of the Plan should be limited to development of the preparations for the workshop, and that firm proposals should be presented to the Review Meeting for the holding of the workshop early in the next phase. Development of these proposals should be undertaken by a small study group of experts. Consideration should also be given to following up the workshop with a review of its report at a representative conference including, as appropriate, national governments, intergovernmental and non-governmental organizations.

Activities

(a) Provision of advice to countries about legislation relating to marine mammals matters;

(b) Workshop (5-6 participants) to consider all questions relating to legal aspects of protected areas;

(c) Workshop (5-6 participants) with expertise in conservation laws in various countries, to develop proposals for a comprehensive review of the laws relating to marine mammals.

Outputs

1. Draft legislation for various countries.

2. Report on problems associated with the establishment of protected areas.

3. Recommendations outlining the draft agenda, identify participants and documents to be needed in a major review expert meeting on the legal problems relating to marine mammals.

| | |
|---|---|
| Title of project: | Examination of means of increasing public awareness of marine mammals |
| Project proposal No: | MM 9 R (Replaces MM 15) |
| Subject area: | Living marine resources |
| Geographical scope: | Global |
| Implementation: | IUCN |
| Duration: | 30 months |
| Cost of project: | US$ 100,000 |

Objectives

To examine and identify ways and means of improving the efficiency and co-ordination of campaigns to increase public understanding of conservation activities related to marine mammals.

Background

A broad distinction is possible between the needs of developing countries and those of the developed countries regarding information related to marine mammals conservation. The most urgent need in developing countries is often to ameliorate situations in which local communities, by their actions, have adverse impacts on marine mammal populations. In such cases the most important aspects of spreading public information may be directed towards increasing understanding by the local people of the effects they are having on the marine mammals, the ways by which they can reduce those efforts, and the reasons - as far as possible at the local level - why they should do so. In such countries there is probably less advantage to be gained by widespread and sophisticated programmes directed towards informing an educated public about the unique features of marine mammals, their place in the world's ecosystem and the manner in which they have been harmed by man's activities.

In the developed countries on the other hand it is campaigns of the latter kind which are more appropriate. In such countries they not only contribute to the cultural background of society, they also promote public support for legislation and othr political actions which may help to improve the conservation of marine mammals on a worldwide basis. In view of the extent to which such campaigns have already been pursued in some countries in recent years, it might, however, be useful for the workshop to examine the progress which has already been made in creating an informed public in the most advanced countries and the extent and particular purposes for which further efforts are required. In this connection there could usefully be discussion of need for accuracy in the information given to the public and the means by which this may be achieved. Accuracy has not in the past been always a feature of publicity material about marine mammals.

Activities and workplan

The Consultation recommended that the workshop should be held early in 1985, prior to the UNEP Governing Council meeting, and that a sum of $100,000 should be provided for its support. IUCN had already, about three years ago, begun preparations for such a workshop to involve about 100 people. An agenda had been drafted and tentative lists of participants had been drawn up; the project however lapsed for want of support. It appears that the proposal now put forward under the plan could usefully build on the work already done by IUCN. Some other non-governmental organizations with special interests in this field could also be involved. UNESCO, with its special interests in the field of public information on scientific and cultural matters, could also be invited to take part.

Preparation for such an extensive workshop will involve considerable work despite what has already been done by IUCN. It will be necessary to give much thought to the scope of the workshop, its formal agenda, the selection of participants, particularly chairman and discussion leaders, and the preparation of documents and other material. The time now remaining for this work to be carried out is not likely to be more than required. It seems very desirable that preparatory work on this project should therefore be started as soon as possible. A sum of $20,000 has been proposed for this purpose in 1984, and much of this seems likely to be required for documentation. An initial planning meeting should however be held as soon as possible; this could be a small group, e.g. representing UNEP, IUCN, and UNESCO; its function would be to make arrangements for the substantial preparatory activities to be undertaken in 1984 and perhaps to identify other organizations to be involved. In selecting the participants in the workshop it will be important to ensure that they are widely representative. They should include:

Representatives of organizations involved in marine mammal publicity;

Media specialists;

Scientists familiar with marine mammal problems;

Fisheries and conservation administrators;

Representatives of fishing industries and of other industries involved with marine mammals.

Output and use of output

A comprehensive report with identification of needs for increased awareness of marine mammals and ways in which the public can be made more aware of the threats to marine mammals. The report will be of value to governments, international organizations, and groups having special interest in marine mammals conservation.

PUBLICATIONS IN THE UNEP REGIONAL SEAS REPORTS AND STUDIES SERIES

No. 1 UNEP: Achievements and planned development of UNEP's Regional Seas Programme and comparable programmes sponsored by other bodies. (1982)

No. 2 UNIDO/UNEP: Survey of marine pullutants from industrial sources in the West and Central African region. (1982)

No. 3 UNESCO/UNEP: River inputs to the West and Central African marine environment. (1982)

No. 4 IMCO/UNEP: The status of oil pollution and oil pollution control in the West and Central African region. (1982)

No. 5 IAEA/UNEP: Survey of tar, oil, chlorinated hydrocarbons and trace metal pollution in coastal waters of the Sultanate of Oman. (1982)

No. 6 UN/UNESCO/UNEP: Marine and coastal area development in the East African region. (1982)

No. 7 UNIDO/UNEP: Industrial sources of marine and coastal pollution in the East African region. (1982)

No. 8 FAO/UNEP: Marine pollution in the East African region. (1982)

No. 9 WHO/UNEP: Public health problems in the coastal zone of the East African region. (1982)

No. 10 IMO/UNEP: Oil pollution control in the East African region. (1982)

No. 11 IUCN/UNEP: Conservation of coastal and marine ecosystems and living resources of the East African region. (1982)

No. 12 UNEP: Environmental problems of the East African region. (1982)

No. 13 UNEP: Pollution and the marine environment in the Indian Ocean. (1982)

No. 14 UNEP/CEPAL: Development and environment in the Wider Caribbean region: A Synthesis. (1982)

No. 15 UNEP: Guidelines and principles for the preparation and implementation of comprehensive action plans for the protection and development of marine and coastal areas of regional seas. (1982)

No. 16 GESAMP: The health of the oceans. (1982)

No. 17 UNEP: Regional Seas Programme: Legislative authority. (in preparation)

No. 18 UNEP: Regional Seas Programme: Workplan. (1982)

No. 19 Rev. 1. UNEP: Regional Seas Programme: Compendium of projects. (1984)

No. 20 CPPS/UNEP: Action Plan for the protection of the marine environment and coastal areas of the South-East Pacific. (1983)

No. 21 CPPS/UNEP: Sources, levels and effects of marine pollution in the South-East Pacific. (1983) (In Spanish only)

No. 22 Rev. 1. UNEP: Regional Seas Programme in Latin America and Wider Caribbean. (1984)

No. 23 FAO/UNESCO/IOC/WHO/WMO/IAEA/UNEP: Co-ordinated Mediterranean Pollution Monitoring and Research Programme (MED POL) - Phase I: Programme Description. (1983)

No. 24 UNEP: Action Plan for the protection and development of the marine and coastal areas of the East Asian region. (1983)

No. 25 UNEP: Marine pollution. (1983)

No. 26 UNEP: Action Plan for the Caribbean environment programme. (1983)

No. 27 UNEP: Action Plan for the protection and development of the marine environment and coastal areas of the West and Central African region. (1983)

No. 28 UNEP: Long-term programme for pollution monitoring and research in the Mediterranean (MED POL) - Phase II. (1983)

No. 29 SPC/SPEC/ESCAP/UNEP: Action Plan for managing the natural resources and environment of the South Pacific region. (1983)

No. 30 UNDIESA/UNEP: Ocean energy potential of the West and Central African region. (1983)

No. 31 A. L. DAHL and I. L. BAUMGART: The state of the environment in the South Pacific. (1983)

No. 32 UNEP/ECE/UNIDO/FAO/UNESCO/WHO/IAEA: Pollutants from land-based sources in the Mediterranean. (1984)

No. 33 UNDIESA/UNEP: Onshore impact of offshore oil and natural gas development in the West and Central African region. (1984)

No. 34 UNEP: Action Plan for the protection of the Mediterranean. (1984)

No. 35 UNEP: Action Plan for the protection of the marine environment and the coastal areas of Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates. (1983)

No. 36 UNEP/ECLAC: The state of marine pollution in the Wider Caribbean region. (1984)

No. 37 UNDIESA/UNEP: Environmental management problems in resource utilization and survey of resources in the West and Central African region. (1984)

No. 38 FAO/UNEP: Legal aspects of protecting and managing the marine and coastal environment of the East African region. (1983)

No. 39 IUCN/UNEP: Marine and coastal conservation in the East African region. (1984)

No. 40 SPC/SPEC/ESCAP/UNEP: Radioactivity in the South Pacific. (1984)

No. 41 UNEP: Socio-economic activities that may have an impact on the marine and coastal environment of the East African region. (1984)

No. 42 GESAMP: Principles for developing coastal water quality criteria. (1984)

No. 43 CPPS/UNEP: Contingency plan to combat oil pollution in the South-East Pacific in cases of emergency. (1984)

No. 44 IMO/ROPME/UNEP: Combating oil pollution in the Kuwait Action Plan region. (1984)

No. 45 GESAMP: Thermal discharges in the marine environment. (1984)

No. 46 UNEP: The marine and coastal environment of the West and Central African region and its state of pollution. (1984)

No. 47 UNEP: Prospects for global ocean pollution monitoring. (1984)

No. 48 SPC/SPEC/ESCAP/UNEP: Hazardous waste storage and disposal in the South Pacific. (1984)

No. 48/Appendices SPC/SPEC/ESCAP/UNEP: Hazardous waste storage and disposal in the South Pacific. (1984)

No. 49 FAO/UNEP: Legal aspects of protecting and managing the marine and coastal environment of the East African region: National Reports. (1984)

No. 50 IUCN/UNEP: Marine and coastal conservation in the East African region: National Reports. (1984)

No. 51 UNEP: Socio-economic activities that may have an impact on the marine and coastal environment of the East African region: National Reports. (1984)

No. 52 UNEP: Arab co-operation for the protection and development of the marine environment and coastal areas resources of the Mediterranean. (1984)

No. 53 UNEP: UNEP Regional Seas Programme: the Eastern African Experience. (1984)

No. 54 UNEP: Contingency planning for emergencies associated with industrial installations in the West and Central African region. (1985)

No. 55 FAO/UNEP: Marine mammals: global plan of action. (1985)

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