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**COMMUNICATION FROM THE COMMISSION
TO THE COUNCIL AND THE EUROPEAN PARLIAMENT**

**FISHERIES MANAGEMENT AND NATURE CONSERVATION IN THE
MARINE ENVIRONMENT**

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SUMMARY

The Treaty establishing the European Community contains the principle, in Article 6, whereby "environmental protection requirements must be integrated into the definition and implementation of Community policies and activities referred to in Article 3, in particular with a view to promoting sustainable development". Interactions between fisheries and marine ecosystems must henceforth be integrated into the Common Fisheries Policy (CFP), in co-ordination, in particular, with the policy of nature conservation.

This communication forms part of an overall approach designed to improve the integration of environmental considerations in other Community policies, in line with European Council orientations. It supplements various communications and proposals recently submitted to the Council and to Parliament, referring in particular to limiting the impact of fisheries activities, including aquaculture, on the marine ecosystems and to promoting responsible trade.

Interactions between the activities of fisheries and aquaculture and the marine ecosystems are many and varied. These activities can indeed have direct or indirect effects on marine fauna and flora. On the other hand, they are dependent on the quality and availability of the marine resources which make up this fauna and depend themselves on the state of the environment in which they evolve.

The obligations of the Treaty and the international commitments of the Community and its Member States rest in particular on the principles of sustainable development, responsible fisheries, precaution and preventive action. To maintain fishing activity at an economically sustainable level in the long term is impossible without following a rational and precautionary management scheme to preserve the exhaustible resources on which fisheries depend. Overexploitation of fish stocks leads to the economic decline of the fisheries concerned. Therefore, appropriate measures designed to reduce and ultimately eliminate overexploitation and hence to reach a sustainable equilibrium between fishing activities and the targeted stocks will be of long term benefit to the fisheries sector. Also, implementation of such measures will be of benefit to the ecosystems of which these fish stocks form part.

Furthermore, and as stipulated in the 1992 Council regulation establishing a Community system for fisheries and aquaculture, exploitation of living marine resources shall take account of implications for the marine ecosystem. This necessitates consideration of both the direct and indirect impacts of fisheries activities on those parts of the ecosystem which are of no direct commercial interest to the fishing industry.

As fisheries management and nature conservation in the marine environment pursue common objectives, in particular the safeguarding of marine ecosystems, and recommend responsible use of living marine resources as part of sustainable development, they require better co-ordination and coherence between the two sectors.

To promote the implementation of the essential principles in the field of fisheries management and nature conservation in the marine environment, this communication identifies some priorities and implementing measures that will be complementary and even synergistic. It does not however address all aspects of the CFP or of nature conservation policy. Nor is it intended to identify orientations for a possible reform of the CFP, which is foreseen for 2002. The measures that will contribute to the conservation of fish stocks and

thereby achieve sustainable exploitation and to the conservation of marine nature include the following:

- control of fisheries pressure to benefit commercial stocks and marine ecosystems, by way of:
 - * limitation of access to fishing zones, catch levels, and the intensity of fishing activities, and adjustment of fishing capacities to the resources available;
 - * medium-term management-target fixing;
- improved measures for nature conservation in the marine environment, including:
 - * improved selectivity of fisheries operations and greater control of their implementation,
 - * protection of natural habitats or the habitats of species of Community interest by the establishment of the Natura 2000 network in coastal areas,
 - * protection of non-commercial marine species,
 - * establishment of space-time boxes;
- integrated management of coastal areas by:
 - * follow-up of the demonstration programme already carried out.
- improved training, information and transparency:
 - * training of the professionals in the sectors concerned,
 - * communication projects intended for the general public
 - * association of professional organisations and the representative environmental sectors in the consultation processes
 - * information and promotion of collaboration between and among research workers and with other interested parties,
- greater contribution from scientific research to fisheries management and more account taken of the biological impact of fisheries, including :
 - * financial support for multi-field research,
 - * establishment of priorities within the framework of a wide-ranging debate,

The same priorities as those identified at the internal level should also be pursued by the Community in bilateral and multilateral negotiations in the framework of fisheries management or conservation of the marine environment. In particular, there is a need to further integrate sustainable exploitation of living resources and environmental concerns within fisheries agreements with third countries. The commitment of the Community and its Member States to promote responsible fisheries and sustainable development means active participation in the work of appropriate regional fisheries organisations.

1. INTRODUCTION

The fisheries sector made considerable strides in the second half of the twentieth century, largely owing to technical improvements and the modernisation of equipment. Fisheries are now confronted with a growing structural imbalance between catch capacities and the biological potential of fisheries resources, resulting in overexploitation of these resources and alteration of marine ecosystems.

Effective management is essential to ensure that fishing activities are both economically and ecologically sustainable. The overexploitation which continues to seriously affect Community fisheries results in useless and excessive pressure on the marine ecosystems. The rarefaction of the stocks that it generates is contrary to the profitability of fishing enterprises.

This overexploitation is so severe that the scientific authorities have recommended rapid reductions of the exploitation levels of up to 40 %. This is especially the case for a number of stocks that are vital to European fishing, like those of cod and haddock, of hake, of plaice or of herring. In several cases, the abundance of the spawners is even considered insufficient to keep stocks safe from biological collapse. In particular, very restrictive measures for North Sea herring have had to be taken urgently, to avoid a situation comparable to that which required, at the end of the 1970's, the closure of all herring fishing for four years.

The need for strong action is more necessary than ever. It implies the reduction of excess catch capacity, which is the primary cause of overexploitation. This is what the Community is trying to achieve by means of the fourth multi-annual guidance programme, adopted in April 1997, which will determine the evolution of the fishing fleets within the European Union for the next few years. To fully achieve sustainability of commercially important fish stocks and their associated fisheries, and of other biota affected by fishing activities will be a major objective when preparing proposals for the revision of the general framework regulation of the CFP, foreseen in 2002. Such preparation will be based in particular on an evaluation of the current policy and on a broad consultation process.

To ensure a sustainable ecological, economic and social future in this sector, fisheries management has to develop from a practice centred primarily on a stock by stock analysis of the state of fishing grounds towards an integrated approach, taking into account interactions with marine ecosystems. In recent years, the representatives of Community Member States and many third countries have, on numerous occasions, advocated responsible and sustainable fisheries at the many international meetings and conferences on fisheries or the marine environment.

The Common Fisheries Policy (hereinafter referred to as CFP) and the environmental policy of the Community share numerous interests. Both recommend measures intended to ensure nature conservation and the safeguarding of the marine ecosystems, in particular by means of rational management of these resources. The promotion of the quality of marine and coastal waters is also a fundamental feature of these objectives, since the abundance, availability and quality of the resources on which the fisheries sector depends are also part of it.

This communication is part of an overall approach designed to improve the integration of the environment into other Community policies, in accordance with the fifth action plan for the environment, and in particular to integrate the requirements of environmental protection under the CFP. It also represents a first step, as regards the CFP, in the follow-up of the

Communication from the Commission on the Community biodiversity strategy¹⁾ and follows orientations given by the European Council on integrating environmental considerations into EU Policies. It is nevertheless not aimed at giving a totally comprehensive and fully detailed view of all issues that could be addressed in this context.

It covers marine nature conservation, particularly species and habitats, and measures under the CFP aimed at the implementation of sustainable and responsible fisheries and of benefit to marine ecosystems. It supplements the various documents already drawn up on topics connected with interactions between fisheries activities and the marine environment, in particular on:

- control of the impact of aquaculture on the environment^{b)},
- the contribution of responsible trade, in particular in sea food, to environmental protection, and therefore to the nature conservation in the marine environment^{c)},
- maintenance or improvement of the quality of the waters^{d)}, including marine and coastal waters, on which the resources and fisheries activities depend.

After looking at interactions between the activities of fisheries, the marine species and the marine habitats, this document turns to the legal bases of the Common Fisheries Policy and of the Community policy of nature conservation, as well as their international context. It envisages an improved co-ordination and coherence between fisheries management and nature conservation in the marine environment and sets out the conditions and the main ways of achieving this objective, both at internal level in the European Community and at external level.

2. INTERACTIONS AND CONSEQUENCES

Interactions between fisheries activities, including aquaculture, and the marine ecosystems, are many and varied²⁾ and can be classified as direct and indirect interactions:

The main direct effect of fisheries on the marine ecosystems is fishing mortality, which reduces marine population levels and changes their demographic composition, including those species which are thrown back into the sea^{e)}.

Certain fisheries techniques can alter sea-beds and have a considerable impact on bottom-dwellers.

Lastly, certain fisheries activities disturb various species of marine birds, reptiles or mammals. Involuntary catches can represent a serious threat to endangered species.

Indirect effects arise from the above and can lead to changes in the structure of ecosystems, in particular the food chains, or even to a threat to the renewal capacities of populations be they of commercial interest or not (as a result of excessive mortality or major changes in the environment).

1) The references (a) to (q) in the text refer to the bibliography contained in Annex III.

2) Some specific examples are given in Annex II.

The activity of aquaculture can also affect the marine environment directly by changing seabeds and coastal habitats, by discharging waste (food waste, medicine residues, etc.), or even by introducing non-indigenous species. Indirectly, aquaculture activities can lead to the transmission of diseases to wild populations, or even affect the genetic diversity of these populations.

Marine ecosystems may be negatively affected not only through fisheries activities, but also through effects caused by other human activities, such as pollution by hazardous or radioactive substances, eutrophication through nutrient inputs, and physical disturbance caused by dredging and exploration for oil.

3. LEGAL CONTEXT

The CFP and the environmental policy have both adopted the principles of sustainable development, rational and responsible management and precaution and preventive action (annex I).

Among the goals assigned to the Community by the EC Treaty are harmonious and balanced economic development, sustainable growth respecting the environment, as well as economic and social cohesion. In Article 6 the Treaty specifies that the requirements of environmental protection have to be integrated into all Community policies and activities. An undeniable environmental dimension is therefore placed on the CFP by way of responsibility for the conservation and the management of living marine resources and awareness of the impact of fisheries activities on marine ecosystems in general^{b)}. The basic CFP regulation n° 3760/92^{b)} incorporates this principle in Article 2. This Regulation aims to promote sustainable fisheries and rational management of fishery resources. Implementation requires the adoption of implementing regulations.

Objectives of the Treaty in the field of the environment include preservation, protection and improvement of the quality of the environment, as well as prudent and rational utilisation of natural resources. Community policy shall be based on the precautionary principle and on the principles of preventive action and of rectification of damage to the environment at source as a priority. This means taking account of the scientific and technical data available and of the state of the environment in the various regions of the Community. The fifth action programme for the environment confirms the obligation to integrate the requirements of environmental protection into the other policies of the Community.

Two Community directives aim specifically at nature conservation, including in coastal and marine environments: Directive 79/409/EEC on the conservation of wild birds ("Birds" Directive)^{h)} and Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ("Habitats" Directive)ⁱ⁾. The provisions of these two directives are intended to make for the re-establishment or maintenance in a state of good conservation of habitats or of species of significant ecological value and the maintenance of biodiversity.

Despite their common principles and the similarity of their objectives, the two policies of nature conservation in the marine environment and sustainable fisheries management are still too often implemented in parallel, independently of one another. Greater effectiveness will result from co-ordination and from better coherence between the measures adopted.

4. THE INTERNATIONAL CONTEXT

4.1 International conferences

A look at the final statements of the most recent international conferences on fisheries or the marine environment reveals a consensus on the promotion of sustainable fisheries and the preservation of the marine environment. This consensus is expressed both in the conclusions of global fora and in those of international conferences of a more limited geographical scope.

A relevant example at the global level is the world conference on the environment and development (Rio de Janeiro, 1992: Chapter 17 of Agenda 21) and its follow-up through the United Nations General Assembly Special Sessions (UNGASS) which, in June 1997, declared inter alia (paragraph 36) "There is an urgent need for... Governments to prevent or eliminate overfishing and excessive fishing capacity...".

Among recent regional political fora, the Intermediate Ministerial Meeting of the North Sea Conferences in March 1997 adopted a political statement of conclusions which focuses specifically on the integration of fisheries and environmental issues (the "Bergen conclusions").

4.2. International instruments

In the field of fisheries management, a number of international instruments accepted by the Community formally enshrine the commitment to take into account the interactions between living marine resources and marine ecosystems, as well as the biological impact of fisheries on marine ecosystems. Similarly, various international conventions or agreements on environmental protection already concluded or being negotiated aim to protect marine species and habitats against man-induced disturbances, inter alia those due to fisheries or to aquaculture. Among these instruments there are certain conventions and certain international agreements of specific character or limited geographical scope (for example the Barcelona Convention and its Protocol on specially protected areas¹⁾). With regard to the high seas, implementation of these international commitments of the Community requires action at global, regional or sub-regional level.

Despite identical principles and objectives, the multiplicity of these international commitments heightens the risks of divergence, which must be avoided by guaranteeing consistency with the Community policies concerned.

5. OBJECTIVES AT THE INTERNAL LEVEL

The improvement in co-ordination and coherence between the CFP and the policy of nature conservation requires the adoption of a strategy integrating various concrete sectoral measures.

5.1. Reduction of fisheries pressure

To achieve the objectives called for by the Treaty, the CFP must ensure a better balance between the resources available and the capacities of fisheries. Such a balance depends entirely on the reduction of fishing pressure. This reduction can only be achieved by a joint reduction in the number of vessels, in their levels of activity (evaluated in number of days fishing or presence in a given area, for example) and their effectiveness (which can vary with their size, their engine power or their equipment).

This reduction will help to protect all marine ecosystems since it will be of benefit not only to commercial species, but also to species caught together with the target species, in particular those which are usually thrown back into the sea because they are not easily marketable. It will also benefit the bottom-dwellers and fauna and flora by reducing the frequency of passage and therefore the mechanical effects of towed fishing gear on seabeds.

Applying the precautionary principle to the control of, and where appropriate, reduction in mortality rates caused by fisheries involves taking account of uncertainties as regards evaluation of stocks and the dynamics of the populations exploited, in particular with regard to the variability of recruitment (number of young who become vulnerable to the fishing gear each year) or the uncertainties relating to natural mortality rates.

The ongoing implementation of the current conditions within the CFP means that the Commission will:

- **continue its efforts to control and where necessary reduce fishing pressure**, by putting forward proposals to limit catch levels, levels of activity and access to fishing zones and for adjustment of fishing capacities to the resources available. Obviously, highest priority is required for depleted stocks
- for all commercially important stocks, including those specified in the "Bergen conclusions", and for other biota affected by fishing, **move towards adoption of a precautionary approach** by establishing appropriate stock indicators and/or limitations on fishing pressure.

Achieving and maintaining appropriate levels of fishing pressure, both on commercially exploited fish stocks and on other biota, is the essential conservation element of the CFP. To achieve this objective, various management measures must be re-evaluated and, where necessary, improved. However, as indicated in the introduction, this communication is not intended to address comprehensively all possible elements, some of which are already under scrutiny and some of which may be more appropriately dealt with in the framework of the review of the CFP in 2002.

5.2. Nature conservation in the marine environment

To fully integrate the objective of protecting all parts of the marine ecosystems, the management of their natural resources of fishing interest must also include the need for the conservation of their biological components which have no fishing and/or commercial interest.

When an ecosystem of an area requires protection against the impact of some fishing activities, the protection of its habitats and species can be afforded, among other things, by appropriate technical measures aiming to improve the selectivity of fisheries operations, or by imposing space or time restrictions on those fishing activities.

5.2.1. Improvement in the selectivity of fisheries operations

The reduction of catches of juvenile fish, crustaceans and molluscs or catches of species having no commercial interest but requiring additional protection, can be obtained by the adoption of new technical measures or the revision of already existing ones. Such an improvement in the selectivity of fisheries methods could be encouraged by incentives, including those of an economic nature. The revised technical measures regulation⁴⁾, adopted by the Council in March 1998, represents a major step for the increased protection of juvenile fish. The world-wide ban (except for the Baltic Sea) on the use of drifnets, adopted by the Council in June 1998¹⁾, to enter into full effect from the 1st January 2002 will have a major beneficial effect for the conservation of small cetaceans and some species of fish, including sharks.

On the basis of the information available **the Commission will continue to put forward measures to improve the selectivity of fishing gear and to improve methods of control and implementation.** These provisions will aim at pursuing the limitation of catches of young fish and minimising incidental catches of, and/or damage to, particularly endangered species of fish and marine mammals, birds and reptiles.

5.2.2. Protection of natural habitats or the habitats of species of Community interest

Under the "Habitats" Directive it is for the Member States to designate special conservation areas to provide a coherent European ecological network called Natura 2000. They have to take the appropriate measures to avoid the deterioration of natural habitats or the habitats of species of Community interest, and any interference with the species for which special conservation areas are designated.

The provisions of the "Habitats" Directive automatically apply to the marine habitats and marine species located in territorial waters (maximum 12 miles). However, if a Member State exerts its sovereign rights in an exclusive economic zone of 200 nautical miles (for example, the granting of an operating licence for a drilling platform), it thereby considers itself competent to enforce national laws in that area, and consequently the Commission considers in this case that the "Habitats" Directive also applies, in that Community legislation is an integral part of national legislation.

Establishment of the Natura 2000 network in marine areas is not incompatible with the maintenance of sustainable fisheries or aquaculture in the designated areas. Nevertheless, the disturbances created by this activity should not have an effect contrary to the aims of conservation of the habitats pursued by the Directive.

A detailed work programme and a precise timetable have been established to ensure the introduction of the Natura 2000 network. Member States have in particular to designate special areas of conservation and to establish the necessary conservation measures involving, if needs be, appropriate management plans for these sites by June 2004 at the latest³⁾. In this framework, the competent authorities will have to consider which activities, including those concerning fisheries, should be adjusted to minimise the deterioration of natural habitats and the conservation status of species of Community interest.

- **The Commission will ensure effective application of existing provisions.** It will ensure that the **establishment of the Natura 2000 network** covers the coastal and marine areas set out in the lists of habitats and species contained in the "Habitats" Directive.
- In the **medium term**, after effective application of existing provisions of the "Habitats" Directive and the evaluation of their success in protecting in particular the marine species and habitats already listed in its annexes, the Commission envisages a review of these annexes. The period preceding any such review will be used to encourage research needed to improve the knowledge of the marine environment and to gain experience from projects aimed at the management of marine conservation areas.

5.2.3. Strict protection of marine animal species

The "Habitats" Directive obliges Member States to take the measures needed to establish a strict protection system of certain marine animal species in their natural range. This includes in particular the establishment by the Member States of a system to monitor the incidental capture and killing of these species (as for example the monk seal, sea turtles or cetaceans) and of further research or conservation measures as required to ensure that incidental capture and killing does not have a significant negative impact on the species concerned. Several by-catch monitoring schemes have already been co-financed by the Community, in particular under the Research programmes on fisheries (AIR- FAIR projects).

- **The Commission will closely monitor the implementation of this measure by the Member States**, in particular when their first report on the implementation of the "Habitats" Directive, planned for 2000, is drawn up.

³⁾ The accident of the tanker "Sea Empress" off the coast of Wales in February 1996, near sites of major ecological importance, demonstrated the need to combine the designation of special conservation areas with the development of management measures. These measures, to be taken as part of the Natura 2000 network, will address in particular the conclusions of the joint Transport and Environment Council on 25 January 1993 regarding the vulnerability of marine areas to accidents involving ships transporting hydrocarbons or dangerous substances (Statement by Commissioner Fischler: Parliament session of 15.03.96; Oral Questions with debate, item 10: Disasters at sea - Sea Empress - IGA).

5.2.4. Space-time limits on fisheries activities (boxes)

Boxes⁴⁾ are restricted areas inside which specific, different and generally more binding measures apply than those for the entire management area of which they form a part^{m)}. These restrictions can apply to the time of year, fishing gear, ships, catch composition, or any combination of these aspects.

The Commission will plan space-time restrictions intended to reduce the impact of certain fisheries or aquaculture activities on marine ecosystems, whether it be :

- by direct mortality on fish stocks of value for human consumption (e.g. areas of concentrations of adult fish when spawning, or of a high incidence of juvenile fish, crustaceans and molluscs) thereby enhancing the probability of rebuilding or maintaining spawning stock biomass of such species or;
- by direct mortality on stocks of fish such as sandeels which are used predominantly for the production of fishmeal and fish oil to leave in the sea greater quantities of food for species occupying higher trophic levels, be they fish, birds or marine mammals, or;
- by direct impact (catches, injuries, disturbance...) on various species, in particular mammals, birds, reptiles and benthic organisms.

Such space-time restrictions and the areas designated and managed under the Natura 2000 network may have complementary beneficial effects on marine ecosystems.

Measures to improve selectivity or precautionary boxes could be envisaged on a preventive basis where there is sufficient evidence to suggest that failure to implement them could have serious or irreversible effects on marine ecosystems. Periodic evaluations will make for the amendment of such provisions. Conversely, temporary derogation from binding measures adopted on a preventive basis might be possible if new scientific information shows that there is no significant impact.

5.3 Integrated management of coastal areas

Inshore fishing plays a special role in coastal regions. Properly managed, inshore fishing is a sustainable activity using a renewable resource to maintain the social and cultural fabric, contribute to the local economy and attract cultural tourism, without causing significant negative environmental impacts. However, the use of marine resources poses numerous problems, both in cohabitation between trades or between communities, and in its rational management. Cohabitation problems sometimes lead to confrontational situations that are difficult for local authorities to manage. Difficulties in rational management include both those connected with the management of a resource that belongs to all, and also those of pursuing such seemingly incompatible objectives as the maintenance of employment or producer income and the conservation of stocks. Finally, marine aquaculture can have significant impacts on the sheltered coastal waters to which it is largely confined. The coast therefore needs special integrated management.

⁴⁾ In its 22nd report of 3.12.1992 [Document SEC(92) 2347] the Scientific and Economic Committee for Fisheries lists some twenty temporary boxes (renewed by the "TAC and quotas" Regulation) or permanent boxes (established by Regulation (EEC) No 894/97) in Community waters.

In 1996, the Commission launched a Demonstration Programme on Integrated Coastal Zone Management (ICZM)⁹⁾. Jointly managed by the Commission services responsible for the environment, for regional policy and for fisheries (and with contributions from the service responsible for research and the Joint Research Centre), this programme aims to derive lessons from 35 pilot projects representing the diversity of conditions along Europe's coastline.

- The final report on the programme (foreseen as a Commission communication due in early 2000) will include recommendations on future action, outlining the actions necessary to promote sustainable development in the coastal zones, including sustainable and responsible fisheries. Interim results indicate the importance of co-operation between sectoral administrations (including the fisheries departments) in finding solutions that concurrently meet society's interdependent goals of environmental protection, economic well-being and maintenance of social and cultural heritage. The full, informed participation of all interested and affected persons is also essential in arriving at implementable solutions.

5.4. Improved vocational training, information and consultation activities

Providing the decision-making authorities with scientific information on the impact of the fishing activities on marine ecosystems will not be sufficient if it is not accompanied by transparency vis-à-vis professional and environmental organisations in order to obtain their agreement with rational political decisions.

Indeed, the lack of information on the impact of fisheries on marine ecosystems makes it difficult to find realistic solutions, to take account of the legitimate interests of the parties affected or to reach compromises, taking into account the legal, economic or social constraints imposed on the authorities responsible for these political options. This lack of information also masks the conflicts which exist between the interests of certain groups in the fisheries industry.

There can be no transparency without distribution in easily comprehensible form of the relevant scientific information to the consultative bodies engaged in the process of formulating the policies concerned. To this end, in the short or medium term, the Commission:

- **will promote improvements in the training of the professionals concerned.** These people are the most likely to understand the issues of protection of the marine ecosystems and to adapt their professional practices to it whenever necessary. They also have an essential role to play in the monitoring of the quality of the marine environment;
- **is stepping up its information policy** on the biological impact of fisheries and aquaculture on marine ecosystems and, by the same token, on the contribution from fisheries management to reducing this impact. Information documents will also be drawn up to make it possible for the general public to understand the nature of the socio-economic and political issues involved in the protection of marine ecosystems. The Commission will facilitate, in particular, access by the bodies preoccupied with environmental protection to scientific conclusions which form the basis for the Commission's proposals on fixing total allowable catches.

- **will associate the professional organisations and the representative environmental sectors in the consultation processes** planned for the development of measures to manage the marine environment. As an illustration, a Contact Group was set up in 1998 to increase and facilitate exchange of information between the Commission and environmental and developmental NGOs.
- **will initiate various projects to provide the specialists** in fisheries or marine ecology with better information on budgetary aid available, to convince them of the need to collaborate within a multi-field framework and to increase their participation in this scientific work. This information and persuasion work will also concern the various competent national authorities.

All these projects will gradually be stepped up, in particular the training of professionals, including teachers.

5.5. Improvement in the contribution of scientific research

The decision-making authorities need accurate and objective scientific information on the biological impact of fisheries on marine ecosystems. This (biological, ecological, or socio-economic) information will thus enable them to assess and compare the costs and the advantages of the alternative solutions.

To strengthen the relevant research, the Community has set aside significant budgetary resources:

- for the evaluation of interactions between fisheries, aquaculture and the environment, as integrated into the objectives of the fifth framework programme, in particular of thematic programme I "Quality of life and management of living resources",
- for scientific and technical studies and for projects for the environment as part of specific programmes (scientific and technical studies in the sector of fisheries, etc.).

In the short term, scientific information on the biological impact of fisheries will be in many cases insufficient¹⁾. This will give full justification to the implementation of the precautionary principle, which will require future legislative proposals from the Commission to the Council:

- be they corrective measures for the long term
- or preventive measures in accordance with the precautionary principle where the impact cannot be quantified precisely or where the causal link between this impact and the activities of fisheries which are the probable cause of it cannot scientifically be established. A process of revision or of amendment of the measures adopted will have to be envisaged in the light of new scientific information.

In the long term, the Commission has already recommended a strategy²⁾ of strengthening the relevant research and integrating the results of this research into the implementation of the CFP and the policy of nature conservation in the marine environment. The Commission is currently evaluating the costs involved, in collaboration with the relevant scientific bodies, in particular the International Council for the Exploration of the Sea (ICES).

To improve the contribution from scientific research to the management of sustainable fisheries and to nature conservation in the marine environment, the Commission will carry out in particular the following projects:

- **The Commission will continue its efforts to encourage research**, making it possible to better understand interactions between fisheries and the marine environment. Such research focuses not only on technical aspects, but also on the development of an ecosystem approach. The ecosystem approach is a guiding principle agreed in particular under the Biodiversity Convention, but it still needs much work before it can be enacted through management measures.
- Because of budgetary constraints, **priorities have to be established** as regards research on interactions between the use of living marine resources and the environment. These priorities concern political choices and the Commission will encourage a wide-ranging debate for their establishment.

6. OBJECTIVES AT THE EXTERNAL LEVEL

Better co-ordination and coherence between the CFP and the policy of nature conservation will also benefit the Community strategy at international level of promoting sustainable development, responsible fisheries and conservation of biodiversity. **The same priorities as those identified at internal level have to apply to bilateral or multilateral negotiations** relating to the activities of fisheries, in particular when establishing or renegotiating bilateral fisheries agreements, or in the framework of international activities primarily addressing nature conservation issues in the marine environment.

This will require **an effective and efficient commitment of the Community in global frameworks** towards the conservation of marine living resources and the integration of all environment aspects in the management of their use, in particular in:

- the implementation and monitoring of provisions already adopted (United Nations Convention on the Law of the Sea, Agreement on the conservation and the management of straddling stocks and highly migratory fish stocks, Code of Conduct for responsible fisheries);
- the follow up of, and efficient contribution to, the Conference on Sustainable Development and the appropriate UNGASS;
- the participation in negotiations for the promotion of responsible fish trade, in line with the recommendations of the communication on the future for the market in fisheries products⁹⁾;
- the work of the conferences of the parties to the international Convention on Biodiversity (in particular principles and other guidance that would be developed on the ecosystem approach), or other conventions that contribute to its general objective by addressing one more specific issues (for example CITES, Bonn Convention).

Similarly, **co-ordination and coherence should be improved with regard to international activities at the regional scale**, concerning fisheries management and nature conservation in the marine environment. Better co-ordination and integration efforts should be done at all levels, within the Community institutions as well as between the different responsible authorities in Member States. This applies in particular to:

- the work and development of international conventions for marine environmental protection or nature protection and which, to some extent, could be of concern to the fisheries policy (agreements on the protection of cetaceans, Bern Convention, Barcelona Convention, Helsinki Convention, etc.)
- the role and contribution of the Community in fisheries agreements and in regional fisheries organisations.

Following the conclusions of the Council on fisheries agreements of 30th October 1997, emphasising the issue of coherence between the CFP and development policy, the Commission has been carrying out a complete assessment of its policy regarding fisheries agreements. This work will include all appropriate issues related to such instruments (including fish stock conservation, environmental, socio-economic and development aspects). On the basis of the results of this study and of a wide debate with all interested parties, the Commission, where appropriate, will adapt its policy on bilateral fisheries agreements and try to find truly integrated solutions that simultaneously address the range of societal concerns, including socio-economic, development and environmental ones, in particular the need for marine nature preservation.

Besides, the Commission will submit to the Council and the European Parliament a communication on the participation of the Community in regional fisheries organisations with a view to:

- Stressing the role and the presence of the Community as regards sustainable management of resources of the high seas and of highly migratory species and straddling stocks, a role which passes mainly through an active and efficient participation in regional fisheries organisations
- Insisting on the need to give to the Commission the possibilities to assume the role that it should play on the international scene, in particular as regards sustainable management of fishery resources.

7. CONCLUSION

Fisheries activities are closely connected with marine ecosystems: over-intense or badly adapted fisheries can damage these ecosystems and seriously affect biological balances. Furthermore, deterioration of marine ecosystems through human activities other than fisheries can harm conservation of the resources exploited. The requirements to integrate environmental concerns and to manage the exploitation of marine living resources in a sustainable manner are already included in the Common Fisheries Policy objectives. This is however yet not fully achieved, neither with regard to the sustainability of commercial fish stocks, nor with regard to limiting the negative impact on marine habitats or species having no direct fisheries interest. Nor has the Community been fully successful as yet in reducing or eliminating the adverse effects of human activities other than fisheries. Fisheries and nature conservation policies have a mutual interest in combining complementary measures.

The implementation of objectives of fisheries management and nature requires increased collaboration between, and awareness raising of, all the actors implying effective co-ordination at all levels.

Good knowledge of the environment and of the effects of the existing or potential measures is a prerequisite for the framing of political decisions. Data collection and processing must not only be better organised, it must also receive greater attention, especially among decision-makers and the socio-professional environments. This knowledge must be used to pursue a policy of reducing pressure from fisheries by adjusting fleet capacities and improving selectivity of techniques, and of conserving marine biodiversity by taking into account the impacts of the fisheries activities on the marine species and habitats, in particular those of community interest.

Possibilities for nature conservation need to be augmented and gradually extended, inter alia through their increased integration within fisheries management measures.

Some goals and measures designed to implement the principle of sustainable use of living marine resources and the principle of integration of nature conservation objectives are summarised in Table I.

TABLE I: Objectives and measures

OBJECTIVES	ACTIONS
Reduction of fisheries pressure	Continuation of efforts aimed at limiting the activities and capacities of fisheries <i>to reduce impact on marine biota and habitats</i> Medium-term management target fixing
Nature Conservation	Improved selectivity of fisheries operations Establishment of the Natura 2000 network, in particular in coastal areas between now and 2004, including where needed associated fisheries management measures in line with the conservation objectives. In the medium term, evaluation of its success to protect marine nature and proposal for a review of the annexes to the "Habitats" Directive Space-time restrictions intended to reduce the impact of certain fishing activities on marine ecosystems.
Integrated management of coastal areas	Follow-up of the demonstration programme between now and the year 2000
Training, information and consultation	Promotion of training of the professionals concerned Strengthening of the policy of "general public" communication Association of professional organisations and representative environmental sectors in the consultation processes Greater participation and co-ordination of researchers
Improvement of contribution from scientific research	Continued support for research on interactions between fisheries and the marine environment Establishment of priorities within the framework of a wide-ranging debate, including on an ecosystem approach
Objectives at international level	Application of the same priorities as those identified at internal level to bilateral and multilateral negotiations in the framework of fisheries management or marine conservation. Effective and efficient commitment by the Community at international level to promote sustainable development, responsible fisheries and nature conservation in the marine environment and promotion of improved co-ordination and coherence at the global and regional levels.

GLOSSARY OF THE MAIN TERMS AND CONCEPTS USED

Biodiversity / biological diversity: The variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (Convention on Biological Diversity).

Marine habitat: Marine area distinguished by its geographical, abiotic and biotic characteristics ("sea-beds").

Fisheries management: The integrated process of information gathering, analysis, planning, decision-making, allocation of resources, formulation and enforcement of fishery regulations which govern the present and future fishing activities in particular to ensure the continued productivity of the resources

Rational management: Principle whereby the adoption of any management measure has to be based on the best scientific information available and on an analysis by an independent scientific body.

Sustainable development: Development integrating into all the relevant sectoral policies, at national and international level, the implications of economic growth on the environment, and seeking to satisfy the needs of the present and future generations equitably, in particular by allotting a value to environmental resources in order to identify and evaluate the impact of economic activities on the environment.

Responsible fisheries: Fisheries combining respect for ecosystems and biodiversity with the needs of consumers and the interests of the fisheries sector.

Preventive action: Corrective action which has to be adopted to prevent an effect likely to occur and to entail serious and irreversible consequences in the absence of intervention.

**EXAMPLES OF DIRECT AND INDIRECT EFFECTS OF FISHERIES ON
MARINE SPECIES AND HABITATS**

As a general rule, fishing activity is directed at one or more species or at a group of species. The main effect of mortality on the target species is a reduction in the average age and size of fish in the stock, and hence a reduction in the overall stock biomass, particularly the spawning stock biomass. Most fish species produce many eggs and are able to sustain quite large reductions in the biomass of fish of spawning age. However, in some cases, as a result of fishing mortality the spawning stock may be reduced to such a level that recruitment is reduced as a result of inadequate egg production. This is referred to as "recruitment overfishing". In the most serious cases, this may lead to a collapse of the stock and the fishery. This happened to the herring and the mackerel stocks in the North Sea some decades ago; the latter has shown no signs of recovery in over twenty years.

As a result of fishing activity, the incidental catches of non-target species due, for example, to entanglements in nets and being caught by trawls, lines and traps, may cause changes in the populations of non-target fish, seabirds, marine mammals and benthic invertebrates. However, the mortality that fisheries cause on non-target species is at present seldom directly quantified.

For example, studies carried out between 1992 and 1995 in the North Sea indicate that 4500 harbour porpoises were killed annually during the period of investigation.

Some types of substrate or of benthic organisms, both flora and fauna, provide important sites for development of eggs, larvae and juveniles of organisms of various types. Damage to benthos of this type may have effects on the ecosystem as a whole. Similarly, some benthic organisms form communities which stabilise the sediments on which they grow. Damage of these communities may lead to erosion of the underlying sediments.

Some benthic animals, such as starfish and hermit crabs, are relatively immune to damage from trawls etc and exploit other organisms which have been exposed or damaged or killed by the passage of fishing gear.

Studies on the effects of beam trawling in the North Sea indicate changes in the abundance of benthic invertebrates and the composition of benthic communities. Species that have declined sharply in abundance appear to have been replaced by other species; the overall numbers of species, in this area, remain little changed. Damage to the sea bed due to scallop-dredging appears to be more severe than that caused by beam trawls.

Removal of fish from one stock can be expected to have complex consequences for its predators, competitors and prey. The consequences of these multispecies interactions manifest themselves in a variety of ways. Breeding colonies of seabirds and marine

mammals may be affected by fisheries competing for the prey species on which they depend. Depletion of food availability may result in reduction in breeding success of birds and mammals. Changes in the availability of particular prey species may cause predatory fish species to redirect their predation to other species, and thereby increase the mortality rate of the latter.

Fisheries may also provide extra food for certain organisms. Discards and offal produced during commercial fishing operations provide for scavenging seabirds a food supply which would not otherwise be available. Various species of fish may also feed upon these discards and offal. Similarly, intertidal harvesting of shellfish may expose otherwise unavailable food for birds. These additional sources appear to have led to an unnatural increase in the numbers of certain species of sea birds.

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