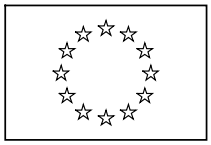

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COMMUNICATION FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

Development of a Community Action Plan for the management of European Eel

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1. INTRODUCTION

The European eel (*Anguilla anguilla*) is a fish that occurs in fresh and brackish waters in almost all of Europe (including the Baltic and the Mediterranean) and in Northern Africa, as well as in marine waters of the North Atlantic. The species migrates throughout the Atlantic and adjacent seas to continental waters where its distribution area is estimated at ca. 90,000 km^2.

Eels are exploited in most European countries and are involved in re-stocking and aquaculture practices. The European eel is therefore important not only as a natural asset but also as an economic resource for European fishermen and aquaculturists.

Concerns about the conservation of this species has been growing for the last few years and the need for conservation and management measures has been clearly identified by scientists, managers, and even by the public at large. The International Council for the Exploration of the Sea (ICES) recommended in its October 2002 report that a recovery plan for European eel is urgently needed. ICES further advised that the rebuilding plan should include measures to reduce exploitation of all life stages and restore habitats. ICES also recommended that if no such plan is agreed, exploitation should be reduced to the lowest possible level.

At present conservation measures are being taken at national level in Community and non-Community countries. However, given the fundamental trans-boundary migration pattern of European eel, national measures are not sufficient to ensure adequate conservation of this species in Europe. Hence the need for Community action.

The conservation and management of eels is a very wide-ranging issue. Biologically, the conservation of eels depends upon the commercial exploitation as well as the preservation of its natural habitats, so that both environmental considerations and fisheries management issues need to be taken into account. In addition, the possible effect of trade on the conservation of this species adds an additional dimension to the problem. Furthermore, there is also an animal and public health dimension.

The overall approach is centred on the ICES advice. A number of actions are identified that are intended to develop a comprehensive basis for rebuilding eel stocks, based on locally-appropriate actions and targets. This rebuilding and management approach requires substantial acquisition of new scientific data before it can be fully implemented. Therefore, the Commission will urgently seek to identify a panoply of precautionary measures for rapid implementation, while the rebuilding plan is being developed.

2. BIOLOGICAL BACKGROUND

Eels are a *catadromous* species, that is, a species that lives in fresh water but returns to the sea to reproduce. The life cycle of the species has not been entirely resolved, but all traditional evidence suggests that the life cycle occurs as follows. Larval eels are produced from spawning grounds in the Sargasso Sea, and (after an undetermined and poorly understood drifting phase) these metamorphose to become small "glass eels" which recruit to European estuaries and rivers. The glass eels migrate upstream and colonise a wide range of river, lake and wetland habitats, when they settle from a pelagic migratory phase to become "yellow eels". These may continue migrating to thoroughly colonise the river basins. Eels spend most of their lives as yellow eels, passing through a growing phase of the order of ten to twenty

years. After this, the fish change their colour from the brown/yellow colouration of the yellow eel phase to the black and silver colouration of the "silver eel" phase. The silver eels cease feeding and begin the long downstream migration from the rivers to the estuaries and the sea, after which they are presumed to migrate to the spawning areas.

Recent genetic evidence suggests that the long-established view that a single spawning stock breeds in the middle of the Atlantic and replenishes all European rivers may be inaccurate. Three putative, genetically distinct sub-groups have been identified, although research is progressing on stock identity :

– the Northern European, corresponding to the Icelandic stocks;

– the Western European, including Mediterranean, western European and Baltic stocks;

– the Southern European, corresponding to eel stocks of Morocco.

In any case, the territory and coast of the Community seem to be populated by a single eel stock: the Western European one.

3. FISHERIES FOR EELS

In Europe, eels are subject to a variety of capture fisheries and other commercial activities, such as re-stocking and aquaculture. Many of these activities are of long standing. Data on catches are not very reliable, but some unofficial estimates reach 30,000 tonnes per annum in the 1990s, with a first-sale value of *ca.* € 200 million. An estimated 20,000 to 25,000 people are involved in eel fishing, at least part-time. Many of these are non- professional fishers.

Fisheries are prosecuted across Europe on the different life stages of the species: there are seasonal fisheries on glass eels, year-round fisheries on yellow eels and seasonal ones on silver eels. No targeted fisheries take place in oceanic waters but river mouths, coastal areas with brackish waters and continental fresh water bodies are all subject to different types of fisheries. These are pursued with a variety of gear. The marketing of eels also takes a variety of forms but is generally very decentralised with multiple sales of small quantities in different places: this makes it very difficult to monitor and control these fisheries. Consumer markets for eels exist in all Member States of Europe, although these differ considerably in terms of the sizes of eel sought. Germany and the Netherlands are the principal markets.

Intensive aquaculture of eels has existed for half a century and has steadily increased over the last decades. Today, it produces in excess of 10,000 tonnes a year. Eel aquaculture is still based on the supply of glass eels from the wild, since artificial reproduction fails in the young larval stage. Therefore aquaculture constitutes at present a form of exploitation of the wild eel stock. Export of glass eels for aquaculture in countries outside Europe is also an important economic activity.

Re-stocking is also a traditional practice, carried out in most Community Member States, in some cases dating back to the 19th century. Re-stocking is based on the capture of eels from the wild for their release in other areas. Most usually re-stocking activities are carried out at the glass eel stage but yellow eels may also be used for this purpose. Re-stocking levels have recently dropped due to the decrease in the abundance of glass eels and it is now estimated that around 5% of total catches of glass eels are used for this purpose.

4. EVALUATION OF STOCK STATUS AND THE NEED FOR ACTION

The most recent evaluation of the eel stock was made by the ICES-EIFAC Working Group on Eels in October 2002[1]. ICES considers that the stock is outside safe biological limits and that fisheries in recent years have not been sustainable[2]. Recruitment has declined since 1980 and reached an historical low point in 2001. Recent information indicates that no improvement can be expected for 2002. Fishing mortality is high on both juvenile and older eels in many water systems. Other anthropogenic factors (habitat loss, contamination and transfer of diseases) have had a negative impact on the stock, possibly of a magnitude comparable to exploitation.

ICES cannot define a stock-wide management objective. Such an objective would need to be defined internationally and to target the whole continental distribution area.

ICES advice from ACFM (October 2002) is that: "ICES recommends that an international rebuilding plan is developed for the whole stock. Such a rebuilding plan should include measures to reduce exploitation of all life stages and restore habitats. Until such a plan is agreed upon and implemented, ICES recommends that exploitation be reduced to the lowest possible level". ICES further informed that "Actions that would lead to a recovery of the stock are urgently required. Management of eel fisheries requires co-ordinated action at the scale of catchment areas and higher, commonly spanning multiple jurisdictions. Uncoordinated management actions in isolated areas are not likely to lead to a recovery of the stock. Because of the length of the life cycle, it will take 5 to 20 years before positive effects can be expected."

A rebuilding plan may use different instruments. A comprehensive analysis of different management instruments for eel fisheries are provided in the report of the ICES/EIFAC Working Group on Eel, adopted in 2001.[3]

The eel stock is seriously depleted as evinced by the recent very low recruitment. Furthermore, due to the high price of eels (especially glass eels), there are very strong economic incentives to continue fishing down to the last few recruits. The long time-lag between recruitment and spawning also suggests that profitable fishing can continue even when the stock is at an extremely depleted level. This means that the eel stock is in an extremely high-risk situation.

These characteristics point to a strong need for urgent management action. This is also supported by the precautionary principle, which suggests that high-risk situations need urgent protective measures. In many areas, the quickest and most effective measure to increase the survival of eel will be a reduction in fishing, whereas environmental improvements may take some years to show results.

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1 Report of the ICES/EIFAC Working Group on Eels. ICES C.M. 2003/ACFM:06

2 Report of the ICES Advisory Committee on Fishery Management, 1998. ICES Coop. Res. Rep. No. 229.

3 Report of the ICES/EIFAC Working Group on Eels. ICES C.M. 2002/ACFM:03

5. LEGAL BACKGROUND FOR MANAGEMENT

5.1. Community framework for action

Article 1 of Council Regulation 2371/2002 establishes a very wide scope for the application of Community measures in the field of fisheries management, including 'on the territory of Member States'. However, the definition of 'living aquatic resource' in Article 3(b) of the same regulation limits the definition to catadromous species 'during their marine life'. Such a definition would seem to exclude the management of eels during their fresh water life from the scope of Regulation 2371/2002.

Community management of eels during their marine life alone would clearly be insufficient, since most human activities that affect eels take place in fresh waters. It must be said, in this context, that the spirit of Council Regulation 2371/2002 is clearly to bring all living aquatic resources, including catadromous species, under the scope of Community action when and where necessary. From that point of view, the Commission believes that Council Regulation 2371/2002 does not constitute a barrier to the management of eels, including during their fresh water life, at Community level.

Community competence in the management of eels may be inferred directly from the EC Treaty (in particular, Article 37). However, in order to bring more clarity to the relevant legal texts, the Commission intends to propose an amendment to the definition of 'living aquatic resources' in Article 3(b) of Regulation 2371/2002, which will remove the words 'during their marine life' in respect of catadromous species.

5.2. Eels and international law

Catadromous species are the subject of particular treatment in international law: UNCLOS has a specific article (Article 67) laying down the general principles applicable to the management of these species. These principles (different from those applicable to other species such as sedentary, highly migratory, anadromous, etc.) are briefly the following:

- Coastal State responsibility for management but with an obligation for States through whose EEZs the stock migrates to reach agreement on management measures;
- Prohibition to fish in the high seas;
- Obligation to ensure ingress and egress of the migrating fish.

These elements point to the need for a co-operative, transnational approach to management. They also bring into play an important transnational environmental factor: the need to ensure that rivers do not become barriers (through pollution or public works) for the movement of the species through its natural habitat.

After the enlargement of the Community, as of May 2004, most of the river basins of the European eels stocks will be within the Community. However, these river catchments will still include some third countries. Hence it is necessary to bring the management of eels to multilateral bodies. Some possible approaches to establishing multinational management measures are described in Section 6.6.

5.3. Eel management in the perspective of the Water Framework Directive

The Water Framework Directive (EC) No 2000/60[4] is a legislative framework to protect and improve the quality of all water resources such as rivers, lakes, groundwater, transitional and coastal water within the European Union. The WFD was published and entered into force in December 2000. Member States must incorporate the WFD into national law by the end of 2003. Once this has taken place, many more steps must be taken to achieve "good status" of all European waters by 2015.

One of the key elements of the Directive is the introduction of River Basin Management on a Europe-wide scale including international co-ordination in transboundary river basins.

There are several aspects in which the WFD will promote the objectives of the eel action programme, in particular:

– by considering the possibility to include eel as a species which is an indicator of "good ecological status" in relation to "river continuity", *i.e.* as a biological quality element;

– by improving the "river continuity" through the programme of measures;

– by increasing the information on river basin scale as regards obstacles to eel migration;

– by using the management system and the river basin authorities when setting targets and implementing eel action programmes.

6. MANAGEMENT MEASURES

6.1. A rebuilding plan for Eel

As noted above, there are many discrete and regional fisheries for eel at different stages in its life cycle throughout Europe, and this is a stock which is biologically depleted and requires urgent management action to secure recovery of the stock. This means that a large number of local measures need to be taken in order to improve growth and the escapement of adult eel back to their spawning grounds. Local measures will all have some cost, whether this is due to reduced fishing activity or to investment in environmental improvements. These costs will therefore be incurred by a wide variety of different of local actions.

Although the costs will be local and diverse, the benefits derived from improving eel escapement will be an increase in the spawning biomass and an eventual increase in the recruitment of glass eel. This will be a generalised benefit, widespread across Europe and adjacent areas.

The challenge for the Community is rapidly to design a management system that ensures that the local measures produce results in a consistent way across the various river basins, Member States, and adjacent countries. This eel management system should be one in which all stakeholders make a contribution to stock recovery, and those contributions should be quantified and equitably distributed.

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4 O.J. L 237, 22.12.2000, p. 1-72

Current knowledge about eel stocks and their management is insufficient, however, to support the development of such a system. The Community therefore needs to build the basis for such a management system, while undertaking some emergency measures to promote stock recovery.

The essentially local nature of eel management measures means that it is not appropriate for the Community to be involved in the detail of implementing actions. The Commission's view is that responsibility for the attainment of the local eel management targets should remain with the Member States, as well as the choice of management instruments to reach those targets.

However, the Community should be responsible for:

- Establishing targets for eel management at different life stages;
- Collating information on and reporting on the effects of the measures in place;
- Proposing Community-level measures where these can reinforce local measures;
- Backing up local efforts by scientific and technical support;
- The international dimension of eel conservation.

These ideas are developed in more detail below. Some emergency measures that could be introduced as precautionary measures are further discussed in Section 7.

6.2. Establishment of local targets for conservation and management

There are three more-or-less discrete life stages of eel, each of which is subject to different mortalities and stresses. Glass eels recruit to river mouths during a short season, may be fished locally, and are threatened by barriers to upstream migration. Yellow eels are vulnerable over a long period to local fishing activity as well as to habitat degradation, but in this phase they are largely sedentary and not affected by obstacles to migration. Silver eels are threatened by obstacles to downstream migration and by some targeted fisheries.

The Commission considers it necessary to establish three kinds of targets, related to each of the three life stages. Minimum standards should be established in Community legislation for these targets, with adaptations of the values for the more productive river basins and possible derogations for river basins of very low mortality. The values of target parameters should be chosen after obtaining relevant scientific advice from ICES and EIFAC.

In addition to these targets, maintenance of river continuity should be considered a contribution to good ecological status in the context of the Water Framework Directive. This could be established in terms of free migration of eels of all life stages among the various stretches of a river.

6.2.1. Settlement Targets

In order that the productive potential of river basins with respect to eel be utilised, it is essential to ensure that sufficient glass eel are recruited to the upstream areas. The Community should establish an annual settlement target, expressed in terms of the numbers of glass eels per hectare of eel habitat. This would be used to set the levels of glass eel that are needed in each river basin. Local management actions to reach this target would include:

- Management of the local glass eel fishery to allow sufficient escapement;
- Construction of passes in dams to allow elver migration upstream;
- Restocking using glass eels from nearby estuaries.

6.2.2. Stocking Targets

Once an adequate number of glass eel are recruited to the river basins it is necessary to ensure that the yellow eel stock is maintained with sufficiently low mortality that an adequate number of silver eel are produced from the stock. Maintaining a high biomass of yellow eel is not sufficient by itself to ensure silver eel production, if a high biomass is maintained by a high stocking rate and then reduced by a high fishing mortality. A high biomass of young fish that are being heavily fished would not necessarily produce more silver eels. Local actions to reach such stocking targets may include:

- Restrictions on local fisheries, such as closed seasons, closed areas, restrictions on types of fishing gear and management by local fishing licences;
- Establishment of minimum landing sizes;
- Habitat modification, extension and improvement;
- Restocking using eels from aquaculture production.

Yellow eel are also distributed in some coastal areas. Targets for such populations should also be developed where possible.

6.2.3. Escapement Targets

In conservation terms, the main objective of the eel management actions must be to allow an adequate escapement of silver eel. Good stocking of yellow eel does not further eel conservation if the maturing fish cannot then escape to the spawning grounds. For example, a study in the Netherlands[5] indicates that of the female eel, only one in seven hundred survives the downstream migration to the sea, and that fishing mortality on silver is high. The same study indicates a mortality due to fishing on silver eels of 97%. The Commission believes it necessary to establish targets for the survival of silver eel from the stage of its "silvering" until its migration to the sea.

Local management actions that could contribute to these targets could include:

- Managed escapement of silver eels from inland waters to the sea;
- Prohibition of certain fishing gears particularly likely to catch silver eel (e.g. fyke nets);
- Construction of eel passes in dams and hydroelectric installations.

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[5] Aal, de stand van zaken (Eel stocks, the current situation). Dekker et al., (2002) Ministerie van Landbouw, Natuurbeheer en Visserij, Directie Visserij, Den Haag, Netherlands.

6.3. Data Collection

The above-mentioned targets are only useful management instruments if current conditions can be measured with respect to such targets. In order to enable such monitoring, the Commission will, after obtaining relevant advice, propose a comprehensive data collection system for eel at the Community level to cover *inter alia*:

- Catches by fishery and by river basin;
- Escapement from each life stage to the next;
- Incoming recruitments;
- Determination of river continuity with respect to eel migrations;
- Mapping and habitat description and evaluation for rivers with eels;
- Predation and ecosystem effects.

The data collection system will be designed to be highly cost-effective in order to minimise the financial burdens on local authorities. Part of the data collection system may include research projects under contract such as using archival satellite "pop-up" tags to trace the migration of silver eel.

6.4. Support for Local Management in Community Legislation

As stated above, most eel management measures need to implemented at a local level (i.e. the river basin level) and the choice of management instruments to achieve the targets should remain a local choice so far as possible. However, some measures can only be implemented meaningfully at a Community level (for example, minimum sizes for marketing purposes). Some measures that may be considered desirable in most areas might be applicable as Community legislation (e.g. concerning the incorporation of eel passes in new dams, licensing trading in eels, or the prohibition of directed fisheries for silver eel).

The Community environmental policy will also contribute, through the reduction of water pollution and the protection and recuperation of certain natural areas, to the improvement of escapement levels. In order to better evaluate the possible effects of fishery measures on eels, it will also be necessary to evaluate the contribution of environmental improvement to that objective. However, additional measures of this type will not be pre-decided at this stage, other than to note that the scope for Community actions remains open.

In some areas, extensive illegal fishing for glass eels is a major problem, the activity being more intense than the legal fisheries. The Commission will consider the use of licensing and trading measures to restrict and better regulate glass eel fishing activities.

Where restrictions to protect eel stocks are put in place, the Commission will consider proposing financial support for the fishermen concerned, either for retraining to leave the sector or else to redirect their activities to other ends (e.g. glass eel restocking).

6.5. Technical and Scientific Support for Local Management

Recent consultations with the stakeholders, managers and scientists concerned makes it clear that a variety of local eel protection measures have been implemented in various Member

States. This information is not readily available however, and it is necessary and valuable to share such experiences. A compilation and publication of such measures at the Community level would assist local authorities in the design and implementation of new management measures.

The preferred framework for the Community coordination of management authorities within river basins should be the management systems and river basin authorities established under the Water Framework Directive. However, additional institutional systems may be needed to address issues common to eel across several river basins such as:

- a coordinated approach to obtaining scientific advice on management;
- coordination of management measures and trans-border control issues;
- sharing of management experience.

6.6. International Dimension

The European Inland Fisheries Advisory Commission (EIFAC) established in 1957 in the framework of FAO, seems to be the appropriate international body, together with ICES and GFCM, for the provision of scientific advice. As EIFAC is at present a scientific and advisory organisation, the possibility of developing a management body within FAO should be considered.

As many river basins span several Member States, the attainment of the various targets described above will in some cases require coordinated action between two or more Member States. The obligations to reach the targets concerned would apply to all Member States with eel fisheries in the transnational river basins, but the way in which those obligations should be met will require discussion and negotiation among small groups of Member States. These discussions could be held in sub-groups of the Advisory Committee for Fisheries and Aquaculture. Third countries also fish for eel stocks, and there are significant interests in North African countries as well as a smaller participation by Russia and Norway. Some fisheries in Icelandic and Faroes waters should be considered also. For these cases, existing regional arrangements concerning shared stocks should be extended to cover eel management. The appropriate *fora* for such discussions should be the General Fisheries Council for the Mediterranean (GFCM) and bilateral agreements with Russia and Norway. The Commission will begin the development of eel management initiatives in these *fora* during 2004.

With respect to the oceanic distribution of the eel and its presumed spawning area in the Sargasso Sea, the Commission will keep under review any environmental changes in that area that might affect the success of eel spawning and recruitment. Monitoring in this area should be pursued in collaboration with the US and other interested countries, hence opportunities for collaboration in this area will be followed up.

7. EMERGENCY ACTIONS

Scientific advice from ICES is clear in that the present situation is sufficiently disquieting that exploitation of eel should be reduced to the lowest possible level while a recovery plan is being formulated. The Commission accepts this need and invites Member States to participate in examining the emergency actions that could usefully be applied at Community level. The classes of actions that should be examined are *inter alia* those identified by ICES, *viz*.

- Prohibition of fishing in specific areas or for specific life stages;
- Total allowable catches;
- Technical measures regulations;
- Landing size limits;
- Closed seasons;
- Closed areas;
- Licensing of fishermen;
- Local enhancement by restocking;
- Habitat restoration initiatives.

In considering such measures, the Commission considers that the first priority should be to maximise the escapement of silver eel. This is the measure that, with highest probability, will enhance the recruitment of eel to the spawning stock. To secure this end, the Commission will urgently address the issues of :

- a prohibition on fishing activities likely to catch silver eel;
- facilitation of downriver migrations for silver eel.

Subsequent actions will be aimed at ensuring that sufficient yellow eel survive the fisheries directed at them, and have sufficient appropriate habitat to colonise. Then the issue of ensuring that sufficient settlement of glass eel to the yellow eel habitats will be considered. This order of actions is preferred because it is very uncertain what benefit any reduction in glass eel fishing would bring if the yellow eel settlement carrying capacity is met or if silver eel escapement is nugatory.

8. CONCLUSIONS

The Commission's approach to securing eel management is to establish standard targets for eel management conditions, and to propose legislation that places the responsibility to reach these targets upon Member States. To complement this approach, the Commission will help develop standard data collection systems to monitor the state of the stocks with respect to the targets. The Commission will also pursue measures to improve coordination, information, and research concerning eel. The Advisory Committee for Fisheries and Aquaculture could assist the Commission in these activities. The Commission will also seek to reach international agreements concerning eel management with third countries. Coordination with environmental policy will be maintained.

While these actions are being developed into a management plan for eel, the Commission will examine a number of emergency measures that could be applied with immediate effect. The highest initial priority will be placed on assuring the survival and escapement of silver eel on their downstream migrations.

Specific actions are summarised below.

8.1. Commission Actions

8.1.1. Establishment of Targets

The Commission will seek scientific advice concerning the identification of appropriate parameters for defining targets and the values of these parameters when used as targets for settlement, stocking and escapement, having regard to the productivity of various river basins. The Commission will then make legislative proposals.

8.1.2. Improvement of statistics

The Commission will seek scientific advice on the development of a data collection system that is consistent with the definition of targets, and make corresponding legislative proposals. The Commission will consider amending the current Community data collection scheme for fisheries to include eel.

8.1.3. Immediate Precautionary Actions

The Commission will, after seeking relevant scientific advice, propose the prohibition of the use of fishing gears likely to catch silver eel in specific areas and seasons. Measures to facilitate the downstream migration of silver eel will also be proposed. This will be followed by additional proposals to improve the survival of other life stages of eel.

8.1.4. Improved Coordination of Community Eel Management

The Commission will obtain compilations and evaluations of legal and technical measures enacted in all Member States with the primary purpose of eel protection. It will also propose that consultation processes concerning eel should be developed through ACFA.

8.1.5. Promotion of the multilateral management of eels

The Commission will complement the initiative at Community level with a similar initiative at multilateral level, thus bringing relevant non-Community countries into the efforts to manage eels. This will require promoting management action in GFCM and in bilateral discussion.

9. RESOURCE IMPLICATIONS

After a review of data collection procedures, the Commission will consider proposing the inclusion of eel in the Community fisheries data-collection programme, with a corresponding adjustment of funding.

Proposals will be prepared concerning additional funding for specific studies to be funded from the Community's budget line corresponding to the administration of the data collection programme, not exceeding €0.5M in the period 2004-2006.

10. TIMETABLE FOR ACTIONS

Commission Action	Anticipated Timing
Seek advice from ICES and STECF on targets, data collection and technical measures.	Advice requested in late 2003. Provision of advice in mid 2004.
Seek advice through a call for tender compilations of legal and technical measures existing in all Member States concerning eel.	Tender published in early 2004. Provision of advice in third quarter of 2004.
Discussion with Member States on emergency measures.	Third quarter of 2003.
Propose measures to protect silver eel.	First quarter of 2004.
Propose local management targets for each life-stage of eel in the principal Community river basins, and corresponding data collection responsibilities.	Fourth quarter of 2004.
Engage RFOs in parallel discussions concerning eel	From fourth quarter of 2003.