

**Council**

**CNL(05)43**

***Summary of Actions taken by EU Member States in relation to the  
Conservation and Management of Salmon Stocks and the Application of the  
Precautionary Approach***

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#### **1. Stock Rebuilding Programmes**

The NASCO Guidelines on the Use of Stock Rebuilding Programmes (SRPs) are designed to provide national and local agencies with assistance in the process of establishing management programmes which are designed to restore salmon stocks above their conservation limits. The Guidelines therefore provide a link between several other guidance documents developed by NASCO in relation to the application of the Precautionary Approach, including the Decision Structure for the management of salmon fisheries, and the Plan of Action for the protection and restoration of salmon habitats.

Most EU Member States with rivers supporting salmon stocks have adopted procedures that fulfil all or part of the guidelines in a variety of different ways. Thus for example, Denmark has established a National Management Plan for salmon, while in England and Wales, Salmon Action Plans have been developed for each principal salmon river and are used to examine the status of the stocks and the factors affecting them and thus to define priorities for management action. In both Ireland and Northern Ireland, habitat management, restoration stocking programmes and exploitation control measures are in place for rivers where conservation limits are not being achieved, and this includes the use of TACs to manage fisheries in Ireland. For Ireland, these measures are described within the statutory management regime, and for Northern Ireland, Salmon Management Plans are in place for both the Fisheries Conservancy Board and Foyle areas. In Scotland, river management plans are in place for about 100 rivers and proposals for developing stock rebuilding programmes for rivers in the west and north are being developed.

In other Member States a range of management programmes have been developed to address problems, and several Member States have developed specific guidance or policies on stocking. Thus, in Sweden, a strategy has been developed for the introduction and transfer of fish; in Spain, stock rebuilding programmes were initiated on three rivers in Galicia in 1997; and in Germany, about 30 restoration projects have been established that embrace all four major river systems draining into the North Sea: Rhine, Ems, Weser and Elbe. (Atlantic salmon has been extinct in all German rivers since around 1950). In Scotland, a number of hatcheries are operated for stock augmentation projects, and a framework for considering the factors that should influence decisions on stocking has been published.

#### **2. Application of the Decision Structure for Management of North Atlantic Salmon Fisheries**

The EU has about 800 salmon-producing rivers, most of which support rod fisheries and many of which support (or have supported) commercial net or trap fisheries. All these fisheries are subject to a range of regulations, which restrict who may fish, the methods and gear they may use, and where and when the fisheries may operate. In many cases these regulations are specific to individual rivers or fisheries. These regulations are reviewed and

updated on a regular basis according to the legislative framework and management protocols in place.

NASCO has proposed that the Decision Structure might be used either as a guide to, or a record of, such management processes, and within the EU both approaches have been adopted by different Member States. Thus, for example, the Decision Structure is being used as a 'guide' to the implementation of Salmon Management Plans in regions of Northern Ireland, while in England and Wales, it is now being used as a summary 'record' of regulatory decisions, and the form has been completed for several rivers for which new management measures have recently been approved by the Minister. In Ireland, the Decision Structure is being used as both a guide to aid managers in the implementation of the Precautionary Approach and as a record of the decisions taken in the management of individual stocks. In this latter case, it has been applied to the national fishery, but as new information becomes available on conservation limits for individual rivers, it will be applied to salmon fishery districts with the ultimate aim of applying it on a river-by-river basis. Elements of the Decision Structure are also being addressed in the management of the Finnish-Norwegian border rivers, and while no river-specific conservation limits have been established, indices of abundance and biological characteristics of the stocks are taken into account in developing management measures.

Ireland, England and Wales, and Northern Ireland have provided NASCO with details of how the Decision Structure form is being completed and examples for 2004 have been provided in the latter two cases. Finland has indicated that data for the Decision Structure is compiled and retained by the relevant authorities and research bodies.

Fishery managers in various Member States have indicated that the Decision Structure is a useful tool for managers of salmon fisheries. Both in Scotland and in England and Wales, more specific decision-making processes are also being defined to meet the needs of national management programmes. In Scotland, work is being undertaken to further adapt a decision structure for the management of salmon fisheries which exploit different stock components originating from different parts of the catchment at different times of the year; a system is therefore being developed to manage fisheries on a temporal basis because this is considered more likely to protect the diversity and abundance of stocks. In England and Wales, a detailed decision-making process is being developed to help determine the requirements and nature of management measures consistently across all salmon fisheries. The model will be used in 2005 to review the Salmon Action Plans for a number of rivers that have been identified in the Environment Agency's stock conservation review as needing further measures.

It has not been considered appropriate to apply the Decision Structure in Denmark, Sweden, Spain or Germany, in the latter case because there are no fisheries.

### **3. Development and Implementation of Habitat Protection and Restoration Plans**

#### **3.1 *Progress in establishing inventories***

The conservation and protection of salmon habitats in all EU Member States is based upon extensive monitoring programmes, and information is collected for all stocks and rivers in a variety of forms. Inventories of salmon rivers have previously been established in a number of EU Member States, including Ireland, Sweden, England and Wales, Northern Ireland, France and Scotland, and there have been some further developments in the last year. For

example, inventories have been established for the Rhein and Elbe river systems, in Germany, and data on habitat quantity and quality, juvenile fish abundance and adult escapement have been updated for Northern Ireland, in line with the requirements of the EU Water Framework Directive. Spain is in the process of reviewing the status of habitat in salmon rivers in five autonomous regions.

A wide range of stock and habitat monitoring programmes are underway in salmon-producing rivers throughout the EU. England and Wales, Northern Ireland, Ireland and Scotland have also made progress in relation to preparing data for entry to the NASCO rivers database. The Rivers Table on the database for Ireland has been revised on the basis of new information concerning the number of salmon-producing rivers in Ireland. It also presents a preliminary qualitative assessment of their status and the factors, which have been identified as impacting on the habitat and salmon production. The information for all jurisdictions will be progressively input to the database and will be refined annually to provide more quantitative measurable data on impact levels.

### **3.2 *Progress in developing and updating comprehensive habitat plans***

The stock rebuilding strategies and management plans outlined above (Section 1) for several EU Member States all include habitat management plans which are consistent with the NASCO Plan of Action. Thus habitat protection and restoration plans are in place in Sweden, Ireland, Northern Ireland, England and Wales, Scotland, Denmark, Germany and Spain.

There are also numerous examples of local initiatives to improve salmon habitat operated by fishery associations, River Trusts and other similar organisations. Various EU funding sources have been used to further these management initiatives, including: EU Life Funding, which has been obtained for work, including habitat restoration and improvement, in eight Scottish rivers; EU InterReg Funding to support management initiatives on rivers in Spain, France, England, Wales, and Ireland; and EU Peace Funding for approved habitat improvement projects in Ireland and Northern Ireland.

## **4. Guidelines for Incorporation of Social and Economic Factors into Management Decisions under a Precautionary Approach**

The socio-economic values of salmon are widely recognised throughout the EU Member States, and a number of economic studies have been undertaken in recent years to estimate these values and consider how they should be taken into account in stock conservation and fishery management.

The NASCO Socio-Economic Guidelines are also beginning to be used in some Member States. In England and Wales, for example, the Guidelines are being incorporated into the processes adopted by the Environment Agency to determine the most appropriate controls required for stock conservation. The requirement to consider costs and benefits and the needs of communities (in particular those in rural locations) is set out in environmental legislation (including in relation to fisheries) applying to England and Wales. In Scotland, a Scottish Freshwater Fisheries Forum, which involves a wide range of agencies and stakeholders, has been established to develop proposals for the long-term and holistic management of salmon and freshwater fisheries. The work of the Forum complies with the guidelines. The remit is to develop policy that takes account of biological, fisheries and wider socio-economic factors to ensure long-term and sustainable fisheries for salmon and freshwater fish in Scotland. In

other Member States, there is close co-operation with angler and netsmen's organisations and the public in relation to salmon management programmes.

## **5. Returns made in accordance with the Williamsburg Resolution**

Returns were made by Ireland, Denmark, Finland, Germany, Spain and the UK, and are presented in Council paper CNL(05)20.

Protocols, codes of practice and requirements are in place throughout Member States such as Finland, Ireland, Spain and Scotland in respect of issues such as siting, single-year classes, fallowing, stocking densities, dealing with mortalities and disease control. Measures include not only requirements to comply with EC Directives, but also with domestic legislation. However, there are still areas, e.g. in Scotland, where some of the smaller farms are as yet unable to introduce single-year class operations because of a lack of suitable alternative facilities.

Of particular note are the measures that have been adopted to deal with issues such as the incidence of ISA, IHN and VHS. Procedures to address real or possible infestation with *Gyrodactylus salaris* have been or are currently being developed throughout the Union, as well as contingency plans to deal with any possible outbreak. Finland has introduced new decrees and statutes to protect important river systems. Two of the major wild salmon producers in the EU, Scotland and Ireland, have additional safeguards over and above the normal EC measures in place to help prevent *G. salaris* being introduced, but there is still progress to be made in developing measures to minimise the risk of introduction, which must be the first priority in tackling this issue.

Epidemiological zones have been established throughout Member States in respect of a number of diseases, and Fish Health Inspectorates undertake routine sampling to monitor disease status. Lists of notifiable diseases have been established at the EC level (Directive 91/67), and sampling procedures in place in Member States are well equipped to detect any new disease or parasite that may affect salmon. Procedures are in place throughout the Member States to permit, prescribe and monitor the use of veterinary medicines to treat farmed fish. There are significant research programmes in place, e.g. in Germany and Scotland, to better understand how diseases and parasites are transmitted. This work will help inform decisions on better controls on fish movements and health certification.

Gene banks have been established in Denmark and Spain (sperm cryo-preservation). This issue is currently being addressed in Scotland, although no such resources have been established as yet. In Ireland, resources have been secured through the National Development Plan and, following procurement, a project to develop a genetic baseline for all such salmon stocks is to be undertaken. Throughout the Member States, including Denmark, Finland, and the UK, research programmes are in place to describe the genetic make-up of individual stocks insofar as this is possible. These techniques will help in identifying the impact of escaped farmed fish on wild populations.

Cooperation with the salmon farming industry to develop codes of practice to reduce disease risks, environmental impacts, specific issues such as sea lice, and escapes to the minimum possible have been or are being developed throughout the Member States. These codes also cover containment issues such as cages, moorings, and related structures and general husbandry procedures. Compliance and transparency issues still need to be developed in some States. Procedures are in place in a number of jurisdictions, including Ireland and

Scotland, to require escapes or incidents that may have led to escapes to be reported. In Scotland, for example, all incidents are investigated by the Fish Health Inspectorate to determine the causes so that repeats may be avoided.

Where escapes have occurred, procedures are in place in a number of jurisdictions, such as Scotland, to try to effect recapture of the lost fish. In jurisdictions such as Denmark and Scotland, significant research programmes are in place into the genetic make-up of particular stocks. In others, such as Germany, Scotland and Ireland, cooperation between, for example, utility companies and fisheries managers is on-going, although with various degrees of success in recapturing escaped fish.

There have been various examples of research initiatives to support the provisions of the Williamsburg Resolution. For example, in Ireland and Scotland, joint simulated release experiments have been designed but not yet implemented due to concerns in home waters. In Scotland, the Scottish Aquaculture Research Forum has been established to take forward the research priorities in the Strategic Framework, which cover industry, wild fisheries and environmental issues. Progress on all of these issues is necessarily limited by the resources available.

In Germany and France, restocking programmes try to use closely related stocks. In general, hatchery operations for restocking use broodstock obtained, if available, from the river where the programme is being undertaken or one nearby (e.g. eggs from upstream-migrating adult salmon). Research has revealed, however, that salmon from rivers that are close together in a geographical sense may not necessarily be any more closely related than fish from rivers that are widely separated. Thus, more research is needed to adequately inform any restocking programmes.

There are no proposals to develop farming of transgenic salmon in any EU Member State at this time.

There is no research currently underway in relation to the use of sterile fish. There is still much concern about the performance of sterile salmon in farming, although these fish are widely produced in the rainbow trout farming industry.

It is clear that there are still major difficulties with respect to the physical marking or tagging of farmed fish, including not only cost implications, but also animal health and welfare issues.

## **6. Other issues**

### **6.1 By-catch**

The EU has no new information to report on issues relating to by-catch.

### **6.2 Acid rain**

Many rivers in the EU area suffer from acidification. These rivers tend to be coastal rivers in the west of Ireland and Scotland, and large upland areas such as those in mid- and Northern Wales. Typically, the main causes are identified as high peat content, high rainfall, local geology of slow-weathering rocks and base soils which offer little neutralising capacity to acidifying pollutants in soils. Extensive conifer afforestation in these areas adds to the

problems of altering soil chemistry with drainage and filtering of acidic pollutants from the atmosphere. Waterways may suffer from chronic acidification or from localised or periodic acidic flushes which may very quickly alter the pH of the water (even creating lethal conditions) and may last for only a few hours or for days.

Acid rain, specifically, is not considered a major threat to salmon stocks in general within the EU Member States. Ireland, Northern Ireland, Finland, Spain, France and Germany all report no significant impacts due directly to atmospheric emissions. Furthermore, improvements to forestry practices have been pursued in many areas, and guidelines have been agreed between local fisheries inspectors/agencies and the forestry industry to reduce the impacts of forestry activities on stocks.

In Scotland, the main areas affected by acidification include Galloway (South West), areas of the Cairngorm mountains, parts of Central Scotland and the North West. The areas most affected by freshwater acidification can be identified from critical loads maps published by DEFRA. However, the majority of Scotland's major salmon-producing rivers (Tweed, Spey, Tay, Dee) drain to the East coast and are largely unaffected by acidification problems in the lower reaches, with poor water quality restricted to high elevation headwater areas. Separating the effects of acidification from other environmental factors is complicated except in the most extreme circumstances; however, existing data suggests that reductions in non-marine sulphate are leading to improvements in water quality, less severe acid episodes and modest improvements in salmon production, although other environmental controls, including variable hydrological conditions, complicate the picture. Local improvement works are undertaken by fishery boards, often with financial assistance from the Scottish Executive and the EU. However, the most important improvements to water quality have come as a result of efforts by the UK Government to implement a succession of agreements to reduce emissions of acidifying pollutants. These reductions are expected to continue through a series of agreements and EU Directives including the Gothenburg Protocol, the EU Integrated Pollution Prevention and Control Directive, the revised Large Combustion Plant Directive and the National Emission Ceilings Directive.

However, the Acid Waters Survey undertaken in Wales in 1995 showed that despite large reductions in sulphur dioxide emissions over the past 20 years from UK sources, there had been only a small improvement in chemical conditions of streams and lakes and no biological improvement was detected.

The Environment Agency assessment of risks to the aquatic environment as part of its initial Water Framework Characterisation has determined that just under 3% of the nearly 6,000 rivers and streams in England and Wales are at risk of acidification from various sources, and nearly 21% of 451 lakes assessed (16% by area) were judged to be at risk. Most work is being carried out in waters where the majority of rivers at risk are located. This includes a range of mitigation options including emission reductions, land use management, remediation (including direct dosing with lime) and reintroductions of aquatic macro-invertebrates.

In Germany, acidification from various sources, including acid rain, has been recognised as a problem in some mountain areas for at least 20 years. Liming has been carried out in forested areas where the soils are poor due to low pH.