REPORT OF THE TWENTIETH ANNUAL MEETING OF THE COUNCIL

EDINBURGH, SCOTLAND, UK

2-6 JUNE 2003

President:	Mr Jacque Robichaud (Canada)
Vice-President:	Mr Ole Tougaard (European Union)
Secretary:	Dr Malcolm Windsor

CNL(03)51

NASCO, 11 Rutland Square, Edinburgh EH1 2AS, Scotland, UK
Tel: (Int+44) 131 228 2551, Fax: (Int+44) 131 228 4384, e-mail: hq@nasco.int

CONTENTS

PAGE

CNL(03)51

Report of the Twentieth Annual Meeting of the Council
The Balmoral Hotel, Edinburgh, Scotland, UK
2-6 June, 2003

1. Opening Session

1.1 The President, Mr Jacque Robichaud, opened the meeting. A message of encouragement for the work of NASCO from His Royal Highness The Prince of Wales was conveyed to the meeting by Captain Jeremy Read (Annex 1).

1.2 Dr Paul Brady of the Scottish Executive welcomed delegates to Edinburgh for the Twentieth Annual Meeting (Annex 2).

1.3 The President thanked the Scottish Executive for hosting the meeting and asked that the Organization's gratitude be conveyed to HRH Prince of Wales for his message of encouragement. He then made an opening statement on the work of the Organization (Annex 3).

1.4 The representatives of Canada, Denmark (in respect of the Faroe Islands and Greenland), the European Union, Iceland, Norway, the Russian Federation and the United States of America made opening statements (Annex 4).

1.5 A statement was made by the Government of Ukraine (Annex 5).

1.6 An opening statement was made by the International Baltic Sea Fishery Commission (IBSFC) (Annex 6).

1.7 An opening statement was made jointly on behalf of all the fifteen Non-Government Organizations (NGOs) attending the Annual Meeting (Annex 7).

1.8 The President expressed appreciation to the Parties, the Government of the Ukraine and to the observer organizations for their statements and closed the Opening Session.

1.9 A list of participants is given in Annex 8.

2. Adoption of Agenda

2.1 The Council adopted its agenda, CNL(03)48 (Annex 9).

3. Administrative Issues

The President announced the decision of the Council to re-appoint the Secretary for a five-year period and thanked the Secretary for his exceptional work for the Organization. The Secretary said that it would be an honour and privilege for him to continue to serve the Organization and expressed his gratitude to and admiration for his staff for their outstanding support.

3.1 Secretary's Report

The Secretary made a report to the Council, CNL(03)5, on: the status of ratifications of, and accessions to, the Convention; membership of the regional Commissions; observers at NASCO's meetings; a joint meeting of North Atlantic Regional Fisheries Management Organizations; a proposal to hold a joint meeting with NPAFC, IBSFC, ICES and PICES on factors influencing the marine survival of salmon; fishing for salmon in international waters; the Tag Return Incentive Scheme; a review of international salmon-related literature published in 2002; the Organization's financial affairs and the Headquarters Property.

In accordance with Financial Rule 5.5, the Secretary reported on the receipt of contributions for 2003. Contributions had been received from all the Parties.

Since the last Annual Meeting, one organization, Fondation Saumon, based in France, had been granted observer status.

The Council had previously recognised that there could be benefits from a joint meeting of all the North Atlantic Regional Fisheries Management Organizations to discuss issues of mutual interest. The Secretary reported that representatives from the IBSFC, ICCAT, NAFO, NEAFC, and NASCO Secretariats had attended the second meeting of the group which had been held at FAO on 4-5 March 2003 following the meeting of Regional Fishery Bodies. A number of points arose from the meeting and information had been shared and exchanged in relation to developments in marine governance, illegal, unregulated and unreported fishing and the roles of organizations such as OSPAR and HELCOM. It was noted, for example, that OSPAR had adopted a Protocol on Biodiversity which required it to communicate any concerns it had identified about conservation of fishery resources to the appropriate regional fishery management organizations. Meetings of the fishery Commission Secretariats are a cost-effective method of communication and the Council agreed that the NASCO Secretariat should continue to participate in future meetings of the group.

Last year a two-day joint meeting had been held, with NPAFC, IBSFC, PICES and ICES as co-sponsors, which focused on the factors affecting the marine survival of salmon in the North Pacific and North Atlantic Oceans and in the Baltic Sea. A report of this meeting had been made to the Council at its Nineteenth Annual Meeting. It had been suggested at the joint meeting that an expanded international symposium might be held in future to facilitate improved coordination, cooperation and exchange of ideas between researchers and to allow for effective communication of research findings to the public in order to gain support for research on salmon at sea. Informal contacts with the Secretariats of IBSFC, PICES, ICES and NPAFC had indicated that there was interest in exploring the possibility of organising a symposium either in 2005 or 2006. The Council considered that since the subject under discussion would be salmon at sea, the International Atlantic Salmon Research Board might be the best Organization to sponsor such a symposium and asked the Board to consider it.

The representative of the US referred to the success of NASCO and the involvement of NGOs in its work. She indicated that the US had concerns about the rule concerning NGO communication with the media which had been adopted by the

Council at the Nineteenth Annual Meeting. The US had proposed an alternative wording for the rule and she asked that the issue be kept on the Council Agenda.

The Secretary indicated that he had been contacted by ICES with regard to NASCO co-convening a joint Symposium in 2005 on interactions between cultured and wild salmon. The last joint NASCO/ICES Symposium on this subject had been held in 1997. There was much new scientific and other information available since then and he would like to see involvement by the industry, perhaps through ISFA, in the proposed symposium. The Council agreed to co-convene a symposium on the scientific and management aspects of interactions between cultured and wild salmon and agreed on the need to involve the salmon farming industry in planning the meeting. The Secretary was asked to liaise with ICES on the arrangements.

3.2 Report of the Finance and Administration Committee

The Chairman of the Finance and Administration Committee, Mr Steinar Hermansen (Norway), presented the report of the Committee, CNL(03)6. Upon the recommendation of the Committee the Council took the following decisions:

(i) to accept the audited 2002 annual financial statement, FAC(03)2;

(ii) to adopt a budget for 2004 and to note a forecast budget for 2005;

(iii) to appoint PricewaterhouseCoopers (PWC) of Edinburgh as auditors for the 2003 accounts, or such other company as may be agreed by the Secretary following consultation with the Chairman of the Finance and Administration Committee;

(iv) in light of concerns about the quality of advice received from NASCO's financial advisers, PWC, in regard to the staff pension scheme, to authorise the Secretary to use the Working Capital Fund to deal with this matter as agreed by the Heads of Delegations. The President was asked to write to PWC on this matter;

(v) to transfer the post of the Assistant Secretary to the Professional Category on the A2.1 grade of the Coordinated Organizations' Scales with effect from 1 June 2003;

(vi) to adopt the report of the Finance and Administration Committee.

The President thanked Mr Hermansen for his valuable work and for that of the Committee.

3.3 Report on the Activities of the Organization

In accordance with Article 5, paragraph 6 of the Convention, the Council adopted a report to the Parties on the Activities of the Organization in 2002, CNL(03)7.

3.4 Announcement of the Tag Return Incentive Scheme Grand Prize

The President announced that the winner of the $2,500 Grand Prize was Mr Steven T Henderson, Steamboat Springs, USA. The Council offered its congratulations to the winner.

4. Scientific, Technical, Legal and Other Information

4.1 Scientific Advice from ICES

The representative of ICES presented the report of the Advisory Committee on Fishery Management (ACFM) to the Council, CNL(03)8 (Annex 10).

4.2 Report on the SALMODEL and SALGEN Projects

Reports on two major EU-funded projects, the SALMODEL (CNL(03)9) and SALGEN (CNL(03)28) projects, were presented.

The aim of the recently completed SALMODEL project was to develop methods for establishing conservation limits and pre-fishery abundance estimates for the North-East Atlantic Commission area but the project was also of relevance to management of the West Greenland fishery.

The aim of the SALGEN project was to improve understanding of population structuring and intra-specific biodiversity in European Atlantic salmon stocks and to deliver consensus "state of the art" advice to resource managers for addressing genetic issues in relation to stock conservation, rebuilding programmes and aquaculture impacts.

4.3 Catch Statistics and their Analysis

The Secretary tabled a statistical paper presenting the official catch returns by the Parties for 2002, CNL(03)10 (Annex 11), and historical data for the period 1960-2002, CNL(03)11. The statistics for 2002 are provisional and will be updated by the Parties.

4.4 Report of the Standing Scientific Committee

The Chairman of the Standing Scientific Committee presented a draft request to ICES for scientific advice. Upon the recommendation of the Committee, the Council adopted a request for scientific advice from ICES, CNL(03)12 (Annex 12).

5. Conservation, Restoration, Enhancement and Rational Management of Salmon Stocks

5.1 Measures Taken in Accordance with Articles 14 and 15 of the Convention

The Secretary presented a report on the returns made under Articles 14 and 15 of the Convention, CNL(03)13 (Annex 13). In summary, the returns indicated a pattern of further restrictions on catches, further broadening of the approach to address environmental issues and development of recovery plans for stocks most severely affected. The parasite *G. salaris* has continued to spread, highlighting the importance of the SCPA's work on introductions and transfers. In the US, Atlantic salmon had been listed as endangered under the Endangered Species Act and in Canada preparations are under way for listing of the Inner Bay of Fundy Atlantic salmon stocks as endangered under the Species at Risk Act.

Norway tabled a document, CNL(03)31, on the designation of national salmon rivers and salmon fjords.

5.2 The Precautionary Approach to Salmon Management

(a) Reports on Progress with Application of the Decision Structure for Management of North Atlantic Salmon Fisheries

To assist NASCO's Contracting Parties and the relevant authorities in applying the Precautionary Approach to the management of North Atlantic salmon fisheries, the Council had adopted a Decision Structure. The Council had requested that the Decision Structure be widely applied, without delay, by managers in cooperation with stakeholders on salmon rivers. Reports on progress in implementing the Decision Structure, based on the returns by the Parties, were presented, CNL(03)14 (Annex 14) and CNL(03)33 (Annex 15). Iceland tabled an example of applying the Decision Structure to the management of the salmon stocks in the river Vesturdalsa, CNL(03)36. Norway tabled a document, CNL(03)45, on implementation of the Precautionary Approach to Management of Atlantic Salmon Fisheries in Norway. The European Union tabled a document, CNL(03)41, describing EU salmon fisheries.

While it is less than a year since the Decision Structure was adopted, the President noted that initial progress had been made in its implementation, in monitoring the effects of management measures and in introducing measures to address failures in abundance. The Council welcomed this progress. An *ad hoc* Working Group on the Precautionary Approach had discussed how the Decision Structure was being used and concluded that, while most Parties were using it to provide a record of decisions taken, some had used it to provide guidance to managers on how to reach management decisions, CNL(03)42. Several Parties had prepared their own guidance on how the Decision Structure could or should be used. It was felt that both applications of the Decision Structure were of value and the Group did not feel that any change was required to the Decision Structure itself.

The Council agreed the following format for the annual return of information by the Parties on the use of the Decision Structure:

(i) provide a summary of the fisheries for which the Decision Structure has been applied, indicating whether it has been used as a guide to, or a record of, management decisions;

(ii) indicate where and how completed Decision Structure forms are being compiled and retained, and provide, annually, an example of application when reporting;

(iii) provide comments on how useful managers have found the Decision Structure and suggestions for how it might be improved;

(iv) provide a copy of any additional guidance which has been developed on the use of the Decision Structure.

(b) Reports on Progress with Development and Implementation of Habitat Protection and Restoration Plans

At its Nineteenth Annual Meeting the Council had held a Special Session on habitat protection and restoration. The report of this Special Session was tabled, CNL(03)15.

The NASCO Plan of Action for Application of the Precautionary Approach to the Protection and Restoration of Atlantic Salmon Habitat, adopted by the Council in 2001, aims to maintain and where possible increase the current productive capacity of Atlantic salmon through the establishment and implementation by the Contracting Parties and their relevant jurisdictions of comprehensive salmon habitat protection and restoration plans. In order to measure and improve progress in meeting this objective the Plan of Action proposes the establishment of inventories of rivers. The Parties had agreed to report on progress in implementing their habitat plans and on the establishment of inventories, and a reporting format had been developed for this purpose by the Secretariat and was used on a trial basis for the 2003 returns. The first returns according to this format were presented, CNL(03)16 (Annex 16) and CNL(03)34 (Annex 17). Progress was reported on the establishment of habitat protection and restoration plans, on establishing monitoring programmes to assess the effectiveness of the plans and in the development of inventories of salmon rivers. The Council welcomed this. The Council agreed the reporting format for use by the Parties in subsequent returns.

The President referred to the absence of returns under the Decision Structure and Habitat Plan of Action for some EU Member States (Denmark, France, Spain and Portugal). The representative of the EU undertook to seek full returns.

(c) Report of the Standing Committee on the Precautionary Approach on Application of the Precautionary Approach to Introductions and Transfers, Aquaculture and Transgenics

The Chairman of the SCPA, Mr Jacque Robichaud, introduced the Committee's report, CNL(03)17 (Annex 18). In response to concerns about the risks to the wild stocks from aquaculture, introductions and transfers and transgenics, the Council and Commissions of NASCO had developed five agreements designed to minimise impacts. All of these agreements, with the exception of the Guidelines on Containment of Farm Salmon, had been developed prior to the adoption by NASCO and its Contracting Parties of the Precautionary Approach. The task for the SCPA at its fourth meeting, held in Williamsburg, Virginia had been to review the five agreements and the need for modification and additional measures to ensure their consistency with the Precautionary Approach. The SCPA had proposed to the Council that all the existing agreements should be restructured into one new "umbrella" Resolution amended so as to include elements on burden of proof, risk assessment, mitigation and corrective measures, implementation and reporting. A new annex with guidelines on stocking had been added.

The Council had previously recognised that there would be a need for broad consultations with stakeholders on the SCPA's recommendations. The draft Resolution had immediately been made available to the salmon farming industry through the Liaison Group and the comments from the International Salmon Farmers' Association (ISFA) were tabled, CNL(03)30.

The representative of Canada made a statement, CNL(03)50 (Annex 19), suggesting that the Williamsburg Resolution ought to be a living document that will remain at the leading edge of scientific and other developments to ensure that new or potential impacts on wild Atlantic salmon stocks are addressed. Canada indicated that it would need some time to conclude its consultations but endorsed the principles of the Resolution.

Following revisions to Annex 1 (Definitions) and Annex 4 (Guidelines on Stocking of Atlantic Salmon), the Council then adopted the Williamsburg Resolution, CNL(03)57 (Annex 20).

The Council recognised that the Williamsburg Resolution would evolve in future in the light of experience with its implementation, consultations, improved scientific understanding of the impacts of aquaculture, introductions and transfers and transgenics on the wild stocks and developments in measures to minimise them. The Secretary was asked to reply to the ISFA letter.

(d) Report of the Technical Workshop on Development of a Framework for Assessing Social and Economic Values Related to Wild Atlantic Salmon

The Council had previously recognised that there was a need to consider how social and economic aspects could be incorporated into the Precautionary Approach without undermining its effectiveness. At its Nineteenth Annual Meeting the Council had agreed Terms of Reference for a meeting of the SCPA to consider this aspect of the Precautionary Approach. These Terms of Reference proposed, as an initial step, the development of an internationally agreed framework or template for assessing the social and economic values of the Atlantic salmon and this task had been undertaken by a Technical Workshop which had met in Edinburgh in January 2003 under the Chairmanship of the Secretary, who presented the report, CNL(03)18 (Annex 21).

The wild Atlantic salmon has many aspects to its value, including those associated with recreational, commercial and subsistence fisheries. In addition, however, there are values associated with the existence of the salmon itself. These values are difficult to assess but so widespread that they may greatly exceed the values associated with the fisheries. The Workshop had attempted to explore all of these values and to give some guidance on how each might be assessed. A framework or template had been developed which could be used to assess the social and economic values of wild stocks.

The Council agreed that, as the next step, the Contracting Parties should ensure that the information provided in Table 2 of document CNL(03)18 is complete and that amendments to the table and a bibliography be provided to the Secretariat at the earliest opportunity. This information should, if possible, include studies conducted at research institutes, educational establishments and by consultants. Case studies should then be provided to the Secretariat on how social and economic factors have been incorporated into decisions in relation to management of: fisheries; habitat; aquaculture, introductions and transfers and transgenics; and by-catch. These case studies would form the basis of a desk study to develop standard methodologies which could be reviewed at a Technical Workshop, to be held before the end of March 2004, which would be asked to develop a decision structure for incorporating social and economic factors into management decisions under a Precautionary Approach.

(e) Future Actions in Relation to Application of the Precautionary Approach

The Council considered its future actions in relation to application of the Precautionary Approach, CNL(03)19. NASCO has made major progress over the last few years in developing its thinking on application of the Precautionary Approach. The major tasks in the Action Plan are now well underway and the remaining tasks to be considered by the SCPA are by-catch of salmon (see paragraph 5.6) and stock rebuilding programmes.

A stock rebuilding programme has been defined by the Council as an array of management measures, including habitat improvement, exploitation control and stocking, designed to restore a stock above its conservation limit. These management measures are being addressed by the Council in application of the Precautionary Approach. However, the Council agreed that it would be useful to develop guidelines for stock rebuilding programmes. The *ad hoc* Working Group on the Precautionary Approach developed preliminary guidelines on the use of stock rebuilding programmes in the context of precautionary management of salmon stocks, CNL(03)54 (Annex 22). The Council adopted the preliminary guidelines and agreed that the Group might work by correspondence or, if it proved to be necessary, at a meeting, to further refine these preliminary guidelines which should be available to the Parties well in advance of the Twenty-First Annual Meeting.

The representative of the US presented an overview of the NASCO Atlantic Salmon Rivers and Habitat Database project, CNL(03)38. Under the Plan of Action for Habitat Protection and Restoration it is proposed that inventories of salmon rivers be established. The US had begun the development of a database to hold the US rivers data and would welcome input by the other Parties. The Council agreed to establish a Working Group to work by correspondence to further develop this database. The US agreed to coordinate the work.

The President sincerely thanked the Parties for their work and cooperation on application of the Precautionary Approach. He recognised that there was still much work to be done, particularly on implementation and reporting, but noted that great strides had been made in application of the Precautionary Approach. He believed that NASCO was at the forefront of all the fishery Commissions in applying the Precautionary Approach to its work to conserve the salmon.

5.3 Unreported Catches

The Secretary introduced document CNL(03)20 (Annex 23) summarising the returns by the Parties. These returns indicate that in 2002 unreported catches were estimated to be between 838 and 1,158 tonnes. The Council welcomed the information contained in document CNL(03)20 which presented the information in a transparent manner, noted the continuing efforts of the Parties to reduce the level of unreported catch, and emphasised the need to take further measures to minimise the level of unreported catches. The President indicated that the reporting of information on unreported catches in a transparent manner and the introduction of additional measures to minimise unreported catches were consistent with the Precautionary Approach and could be considered as another element in NASCO's adoption of the Precautionary Approach.

5.4 Report of the International Cooperative Salmon Research Board

The International Cooperative Salmon Research Board was established by the Council in 2001 to direct and coordinate a programme of research to identify and explain the causes of marine mortality of Atlantic salmon and the possibility to counteract this mortality. The Board had held its inaugural meeting in 2001. The report of the first meeting of the Board, CNL(03)21, and a verbal report of the second meeting, were presented by the Chairman of the Board, Mr Jacque Robichaud. The Council noted the progress made by the Board in developing its administrative procedures, in establishing and maintaining an inventory of research, in identifying research gaps and priorities, in identifying opportunities to enhance coordination of research, and in developing an initial pilot approach to fund-raising. The Chairman of the Board indicated that six new projects had been included in the inventory since last year, two of which were concerned with assessment of by-catch, a topic previously identified as a high priority for research. The total expenditure on projects in the inventory amounted to about £4.2 million but no costings were available for five of the projects. The Board had agreed that to better reflect its work it should change its name to the International Atlantic Salmon Research Board. The Council supported the Board's approach to fund-raising, as outlined in its report, and suggested that it now proceed to seek to raise funds to finance gaps in research. The Parties confirmed additional contributions to the Fund amounting to more than £100,000. The President stressed that successful fund-raising would be highly dependent on the level of support from the Parties in identifying sources of funding and making the necessary introductions.

5.5 Scientific Research Fishing in the Convention Area

Prior to the Annual Meeting the Council had approved a proposal from Norway to carry out scientific research fishing in the period 2003-2007. A brief verbal report was presented by Norway on research fishing conducted in 2002.

5.6 By-Catch of Atlantic Salmon

Concern had previously been raised within the Council about the possible by-catch of salmon post-smolts in fisheries for pelagic species of fish, particularly mackerel, in the North-East Atlantic. Estimates provided by ICES in 2002, although preliminary, suggested that the by-catch is potentially significant. The Council had expressed concern about the level of this by-catch and had recognised the need to further improve the initial estimates. The Council had recommended that project proposals to assess by-catch should be afforded a high priority by the International Atlantic Salmon Research Board.

New information derived from scientific research fishing and observer programmes on commercial vessels conducted in 2002 was presented by ICES, CNL(03)8. There was a considerable discrepancy between the large number of post-smolts caught in the research fishery and the low by-catch observed in the commercial fishery.

ICES advised that there could be a number of explanations for this discrepancy and that the best method to estimate by-catches in the commercial fishery was direct observation and through continuing studies on the biology and distribution of post-smolts and older Atlantic salmon in the sea. A number of recommendations for research were proposed by ICES. Information on by-catch of salmon was also presented by Iceland, CNL(03)27.

The Council decided that, consistent with the Precautionary Approach, it will:

(i) encourage and seek appropriate funding for research on the distribution of salmon at sea, on the spatial and temporal overlap between salmon at sea and pelagic fisheries, on the vertical distribution and behaviour of salmon in the feeding areas and on the by-catch of salmon in pelagic fisheries;

(ii) encourage pilot studies on technical adjustments to the deployment of gear in pelagic fisheries so as to minimise by-catch of salmon;

(iii) review the results of the research referred to in paragraphs (i) and (ii) at its 2005 Annual Meeting or a Special Session;

(iv) in the light of the findings of the research referred to in (i) and (ii) above, request that, if appropriate, the Parties, non-Parties and other Fisheries Commissions make adjustments to fishing methods so as to minimise the by-catch of salmon;

(v) continue to ask ICES to provide information on the by-catch of salmon in any existing and new fisheries for other species and of the by-catch of other species in salmon gear.

The Council also reiterated its recommendation to the International Atlantic Salmon Research Board that projects to assess by-catch be afforded a high priority by the Board. The Council believes that agreement on the above constitutes adoption of a Precautionary Approach on by-catch.

5.7 Impacts of Aquaculture on Wild Salmon Stocks

(a) Returns made in Accordance with the Oslo Resolution

The Secretary reported on the returns made in accordance with Article 5 of the Oslo Resolution, CNL(03)22 (Annex 24) and CNL(03)37 (Annex 25).

(b) Liaison with the Salmon Farming Industry

The Chairman, Mr James Ryan, presented the report, CNL(03)23 (Annex 26), of the meeting of the Liaison Group between NASCO and the North Atlantic salmon farming industry, held in Williamsburg, Virginia on 13 March 2003. At the meeting the first reports, according to an agreed format, had been made on progress in developing and implementing Action Plans on Containment of Farm Salmon. The Group had welcomed the progress made. Furthermore, a report of the Salmon Cooperation Group's project (the SALCOOP project) to review existing cooperative ventures between wild and farmed salmon interests, to identify further areas for cooperation, and to examine options for securing funding for cooperative projects, was presented. It was proposed that a Workshop be held in conjunction with the next Liaison Group meeting in 2004, focusing on area management initiatives, restoration programmes and the pros and cons of using sterile salmon in farming and the possible opportunities for cooperative trials. The Council welcomed the progress made by the Liaison Group, supported the proposal for a Workshop and asked that the Secretary liaise with the North Atlantic salmon farming industry on the arrangements for the meeting.

The Chairman of the Liaison Group expressed concern that due process had not been followed with regard to consulting the Liaison Group on the recommendations of the SCPA in relation to aquaculture, and that this could threaten the future of the Group. He then went on to indicate that, in his view, there were many unjustified attacks on the aquaculture industry and that the Williamsburg Resolution could have a major impact on the salmon farming industry. The President indicated that he was surprised that the Chairman of the Liaison Group had introduced issues not part of the Liaison Group's report. The Council had agreed that there was a need for broad consultations with stakeholders and he noted that the aquaculture industry had been consulted immediately following the SCPA meeting. Some stakeholders would consider that the Resolution did not go far enough, while the ISFA had indicated that it could be damaging to their industry. The President indicated that the Resolution was largely a consolidation of existing agreements, with the inclusion of a few new elements including those concerned with burden of proof and risk assessment. A new section on guidelines on stocking had been developed. He thanked the Chairman of the Liaison Group for his presentation, for participating in the Annual Meeting and for the work of the Liaison Group which had made much progress under his Chairmanship, particularly in the field of possible future cooperative ventures.

5.8 Transgenic Salmon

At its Fourteenth Annual Meeting the Council had expressed concern about the risks posed by transgenic salmon and had adopted NASCO Guidelines for Action on Transgenic Salmon, designed to prevent impacts on the wild stocks. Under these guidelines the Parties agree to advise the Council of any proposal to permit the rearing of transgenic salmonids, providing details of the proposed method of containment and other measures to safeguard the wild stocks.

The representative of the US updated the Council on a pending application to the US Food and Drug Administration (FDA) for authorisation to sell and raise transgenic salmon in the US. It is understood that application materials are nearly complete with the exception of an environmental risk analysis. The company had indicated its intent to make reports, which serve as the basis of the application, available to the public. Once the human health and safety issues are fully addressed it is believed that the FDA may make a decision on marketing (as opposed to raising) transgenic salmon within the US. That decision could be made by the end of the calendar year or early in 2004. The FDA has entered into a consultation with the US Fish and Wildlife Service and the US National Marine Fisheries Service regarding the potential for impacts to wild salmon stocks. The environmental risk analysis is needed in order to conduct that consultation. The US agreed to make the environmental risk analysis available to NASCO Parties so there will be an opportunity for NASCO and its Contracting Parties to make their views known to the FDA.

5.9 Predator-related Mortality

Information on predator-related mortality provided by the Contracting Parties and compiled by the Secretariat was presented, CNL(03)24. A document summarising the effects of marine predation on US stocks of Atlantic salmon was presented, CNL(03)39. The President suggested that the issue of predator-related mortality would have to be faced. The Council agreed that, as a first step, it would attempt to gather together all available information on this subject so that a compendium could be prepared for the 2004 meeting. Each Party was asked to name a coordinator for this work.

5.10 St Pierre and Miquelon Salmon Fisheries

In recent years the North American Commission and Council have become increasingly concerned about catches at St Pierre and Miquelon which, although low, have been increasing at a time when there are serious worries about the abundance of North American stocks and when restrictions are being introduced all around the North-West Atlantic. Last year, recognising the need for additional scientific information concerning the mixed stocks exploited at St Pierre and Miquelon, the Council had adopted a Resolution calling on the Contracting Parties to encourage France (in respect of St Pierre and Miquelon) to cooperate with NASCO in initiating a scientific sampling programme for the fishery at St Pierre and Miquelon in 2003.

The President announced that he had very recently received a letter from France (in respect of St Pierre and Miquelon) which indicated France’s intention to implement a sampling programme in 2003, CNL(03)32 (Annex 27). The Council welcomed this development. The Council agreed that the President and Secretary should respond, welcoming the sampling programme and, building on France’s spirit of cooperation, offering to cooperate fully with the support of NASCO scientific representatives.

5.11 Report on Initiatives within FAO of Relevance to NASCO

The Council took note of a report on initiatives within FAO of relevance to NASCO, CNL(03)25.

5.12 **Reports on Conservation Measures Taken by the Three Regional Commissions**

The Chairman of each of the three regional Commissions reported to the Council on the activities of their Commission.

6. Other Business

6.1 The representative of the European Union urged that NASCO pay to ICES its share of the stipend for the Chairman of the ACFM. The Council agreed to this and the 2004 Budget and Schedule of Contributions were changed accordingly. The 2004 Budget and Schedule of Contributions, as amended, CNL(03)52, is contained in Annex 28.

6.2 The Council asked the Secretary to commence negotiations with ICES on a new Memorandum of Understanding (MoU), in accordance with the mandate agreed by the Finance and Administration Committee. In doing so, he should make contact with the other client Commissions of ICES and initiate negotiations in cooperation with them, for greater efficiency, using the draft agreements of these Commissions, where appropriate, as a guide.

7. Date and Place of Next Meeting

7.1 There were indications that invitations would shortly be received for the 7-11 June 2004 and 6-10 June 2005 meetings. The Council decided to hold its Twenty-First Annual Meeting, which would take place in its Twentieth Anniversary year, at a place to which it was invited, or in Edinburgh. It was anticipated that this would be resolved within about 15 days and it would be communicated to the Parties by the Secretary.

7.2 The Council decided not to hold a Special Session during its Twenty-First Annual Meeting but to allocate the first day to meetings of the International Atlantic Salmon Research Board, the Finance and Administration Committee and any other working groups that may need to meet at that time.

8. Report of the Meeting

8.1 The Council agreed the report of the meeting, CNL(03)51.

9. Press Release

9.1 The Council adopted a press release, CNL(03)56 (Annex 29).

Note: A list of all Council papers is contained in Annex 30. The annexes mentioned above begin on page 31, following the French translation of the report of the meeting.

CNL(03)51

Compte rendu de la Vingtième réunion annuelle du Conseil The Balmoral Hotel, Edimbourg, Ecosse, Royaume-Uni 2-6 juin, 2003

1. Séance d'ouverture

1.1 Le Président, M. Jacque Robichaud, a ouvert la conférence. Le capitaine Jeremy Read a communiqué un message provenant de Sa Majesté le Prince de Galles qui exprimait son encouragement à l'OCSAN pour son travail (annexe 1).

1.2 Dr Paul Brady, représentant du Gouvernement d'Ecosse, a souhaité aux délégués la bienvenue à Edimbourg (annexe 2).

1.3 Le Président a remercié le Gouvernement d'Ecosse pour avoir bien voulu être les hôtes de cette réunion et a demandé que la gratitude de l'Organisation soit communiquée à sa Majesté le Prince de Galles pour son message d'encouragement. Il a ensuite prononcé une déclaration d'ouverture portant sur le travail de l'Organisation (annexe 3).

1.4 Les représentants du Canada, du Danemark (pour les Iles Féroé et le Groenland), de l'Union européenne, de l'Islande, de la Norvège, de la Fédération de Russie et des États-Unis d'Amérique ont chacun prononcé leur déclaration d'ouverture (annexe 4).

1.5 Une déclaration d'ouverture a été prononcée par le représentant des autorités ukrainiennes (annexe 5).

1.6 La Commission Internationale des Pêches de la Mer Baltique (CIPMB) a prononcé une déclaration d'ouverture (annexe 6).

1.7 Une déclaration d'ouverture commune a été prononcée au nom des quinze organisations non gouvernementales (ONG), présentes à la Réunion annuelle (annexe 7).

1.8 Le Président a exprimé sa reconnaissance aux Parties, aux autorités ukrainiennes et aux organisations, présentes en tant qu'observateurs, pour leurs déclarations et a clos la séance d'ouverture.

1.9 Une liste des participants figure à l'annexe 8.

2. Adoption de l'ordre du jour

2.1 Le Conseil a adopté l'ordre du jour CNL(03)48 (annexe 9).

3. Questions administratives

Le Président a indiqué que le Conseil avait décidé de réélire le Secrétaire pour une période de cinq ans. Il a remercié le Secrétaire pour le travail remarquable qu'il accomplissait au nom de l'Organisation. Celui-ci a répondu qu'il serait un honneur et un privilège pour lui de continuer à servir l'Organisation. Il a, par ailleurs, exprimé son admiration et sa gratitude envers son personnel pour le soutien exceptionnel dont il faisait preuve.

3.1 Rapport du Secrétaire

Le Secrétaire a rendu compte au Conseil, de par son rapport CNL(03)5, des questions suivantes : état d'avancement des ratifications et des adhésions à la Convention ; nombre d'adhérents aux Commissions régionales ; observateurs des réunions de l'OCSAN ; réunion commune avec les Commissions des Pêcheries de l'Atlantique du Nord ; proposition de réunion commune avec la CPAPN, la CIPMB, le CIEM et PICES qui porterait sur les facteurs influençant la survie marine du saumon ; pêche au saumon dans les eaux internationales ; programme d'encouragement au renvoi des marques ; revue des publications internationales portant sur le saumon parues en 2002 ; affaires financières de l'Organisation et propriété du siège social.

Conformément au règlement financier 5.5, le Secrétaire a dressé un rapport sur les contributions reçues pour 2003. Les Parties avaient toutes versé leurs contributions.

Depuis la dernière réunion annuelle, la Fondation Saumon, une organisation implantée en France, avait obtenu le statut d'observateur.

Le Conseil avait déjà reconnu l'avantage de tenir des réunions communes faisant intervenir l'ensemble des Commissions des pêcheries de l'Atlantique du Nord en vue de débattre les questions d'intérêt commun. Le Secrétaire a indiqué que les représentants des secrétariats de la CIPMB, de la CICTA, de l'OPAN, de la CPAPE et de l'OCSAN avaient participé à une deuxième réunion du groupe, qui eut lieu dans les bureaux de la FAO (OAA), les 4 et 5 mars 2003, à la suite de la réunion des organismes régionaux de gestion des pêcheries. La réunion identifia plusieurs points d'intérêt commun. Les modifications apportées à la réglementation marine, les sujets de la pêche illégale, de la pêche non contrôlée et non déclarée et des rôles des organisations telles que OSPAR et HELCOM suscitèrent également un partage et un échange d'informations positifs. Il fut noté, par exemple, qu' OSPAR avait adopté un Protocole sur la Biodiversité qui exigeait que toute inquiétude que cet organisme pouvait avoir à propos de la conservation des ressources d'une pêcherie devait être communiquée à l'organisme régional de gestion de pêcherie compétent. Les réunions des Secrétariats des Commissions des pêcheries constituaient un moyen de communication peu onéreux. Le Conseil a par conséquent convenu qu'il importait que le Secrétariat de l'OCSAN continue à participer aux prochaines réunions de ce groupe.

L'année dernière, la CPAPN, la CIPMB, la PICES et le CIEM avait co-financé une réunion commune de deux jours qui avait eu pour objet principal les facteurs influençant la survie marine du saumon dans les océans du Pacifique Nord et de l'Atlantique Nord ainsi que dans la mer Baltique. Un rapport de cette réunion avait été dressé à l'intention du Conseil, lors de sa Dix-neuvième réunion annuelle. Il fut suggéré, lors de cette réunion commune, qu'un symposium international de grande envergure soit organisé afin d'encourager une meilleure coordination, une plus grande coopération et un plus large échange d'idées entre les chercheurs. Ceci permettrait par ailleurs de mieux diffuser les résultats de recherche ce qui aiderait à obtenir l'appui du public pour la recherche sur le saumon en mer. À la suite de contacts non officiels avec les Secrétariats de la CIPMB, de la PICES, du CIEM et de la CPAPN, il semblerait que la possibilité d'organiser un symposium soit en 2005, soit en 2006, ait été retenue comme intéressante. Selon le Conseil, la Commission internationale de recherche sur le saumon atlantique serait l'organisation idéale pour parraîner un tel symposium, puisque l'objet des discussions serait le saumon en mer. Le Conseil a ainsi demandé à la Commission d'envisager cette possibilité.

Le représentant des États-Unis s'est reporté au succès de l'OCSAN et à l'engagement des ONG dans le travail de l'Organisation. Elle a indiqué que les États-Unis avaient des doutes à propos de la règle concernant les communications des ONG avec les médias qui avait été adoptée par le Conseil lors de sa Dix-neuvième réunion annuelle. Les États-Unis avaient proposé une autre formulation pour cette règle. Le représentant des États-Unis a également demandé que cette question demeure à l'ordre du jour du Conseil.

Le Secrétaire a indiqué que le CIEM l'avait contacté et avait suggéré que l'OCSAN organise conjointement avec eux un symposium commun en 2005 sur les interactions entre les saumons d'élevage et les saumons sauvages. Le dernier symposium sur cette question, organisé conjointement par l'OCSAN et le CIEM, eut lieu en 1997. Il existait, depuis, de nombreuses nouvelles informations scientifiques et autres données. Le Secrétaire aimerait voir la participation des éleveurs salmonicoles à cet éventuel symposium, probablement par le biais de l'AIES. Le Conseil a convenu d'organiser de pair avec le CIEM un symposium sur les aspects scientifiques et de gestion des interactions entre le saumon d'élevage et le saumon sauvage. Il a par ailleurs reconnu qu'il importait de faire participer les éleveurs de saumons à la planification de ce symposium. Le Secrétaire fut prié de rester en liaison avec le CIEM à propos des préparatifs.

3.2 Rapport de la Commission financière et administrative

Le Président de la Commission financière et administrative, M. Steinar Hermansen (Norvège), a présenté le rapport de la Commission, CNL(03)6. Suite aux recommandations de celle-ci, le Conseil a pris les décisions suivantes :

(i) accepter la déclaration financière révisée de 2002, FAC(03)2 ;

(ii) adopter un budget pour 2004 et prendre acte du budget prévisionnel pour 2005 ;

(iii) nommer soit PricewaterhouseCoopers (PWC) d'Edimbourg, vérificateurs des comptes pour l'an 2003, ou toute autre société recevant l'approbation du Secrétaire après consultation avec le Président de la Commission financière et administrative ;

(iv) étant donné les doutes émis à propos de la qualité des recommandations reçues des conseillers financiers de l'OCSAN, PWC, à propos du plan de retraite du personnel, autoriser le Secrétaire à utiliser le Compte d'avances pour solutionner cette question, comme convenu par les Chefs de délégations. Le Président fut prié de correspondre avec PWC à ce propos ;

(v) faire passer le poste de Secrétaire adjoint au grade A2.1 de la catégorie professionnelle des Organisations coordonnées, à partir du 1 juin 2003 ;

(vi) adopter le rapport de la Commission financière et administrative.

Le Président a remercié M. Hermansen de son excellent travail et de celui de la Commission.

3.3 Rapport sur les activités de l'Organisation

Le Conseil a adopté le rapport sur les activités de 2002 de l'Organisation, CNL(03)7, adressé aux Parties, conformément à l'article 5, paragraphe 6 de la Convention.

3.4 Annonce du gagnant du Grand Prix du Programme d'encouragement au renvoi des marques

Le Président a annoncé que le gagnant du Grand Prix de 2 500 $ est M. Steven T Henderson, de Steamboat Springs, aux États-Unis. Le Conseil a offert ses félicitations au gagnant.

4. Questions scientifiques, techniques, juridiques et autres

4.1 Recommandations scientifiques du CIEM

Le représentant du CIEM a présenté au Conseil le rapport du Comité Consultatif sur la Gestion des pêcheries (CCGP), CNL(03)8 (annexe 10).

4.2 Rapport sur les projets SALMODEL et SALGEN

Des rapports ont été dressés sur SALMODEL (CNL(03)9) et SALGEN (CNL(03)28), deux importants projets financés par l'Union européenne.

L'objectif du projet SALMODEL, achevé depuis peu, était de mettre au point des méthodes qui serviraient à établir des limites de conservation ainsi que des estimations de l'abondance pré pêche pour la zone de la Commission de l'Atlantique du Nord-est, quoique le projet fût également pertinent à la gestion de la pêcherie du Groenland Occidental.

L'objectif du projet SALGEN, par contre, était d'arriver à une meilleure compréhension de la structure des populations et de la biodiversité intra-spécifique des stocks de saumons atlantiques européens. Le projet cherchait par ailleurs à fournir, aux gestionnaires de la ressource, ce qui serait reconnu comme les meilleures recommandations disponibles afin que ceux-ci puissent examiner les questions génétiques dans le cadre de la conservation du stock, des programmes de repeuplement et des impacts de l'aquaculture.

4.3 **Statistiques de capture et analyse**

Le Secrétaire a présenté un document statistique portant sur les déclarations de captures officielles effectuées par les Parties en 2002, CNL(03)10 (annexe 11), et sur les données historiques pour la période 1960-2002, CNL(03)11. Les statistiques de 2002 sont provisoires et seront mises à jour par les Parties.

4.4 **Compte rendu du Comité scientifique permanent**

Le Président du Comité scientifique permanent a présenté une demande provisoire de recommandations scientifiques au CIEM. Fort de l'avis de ce dernier, le Conseil a adopté une demande de recommandations scientifiques au CIEM, CNL(03)12 (annexe 12).

5. Conservation, restauration, mise en valeur et gestion rationnelle des stocks de saumons

5.1 **Mesures prises au titre des articles 14 et 15 de la Convention**

Le Secrétaire a présenté un compte rendu sur les renvois effectués au terme des articles 14 et 15 de la Convention, CNL(03)13 (annexe 13). En résumé, les renvois indiquaient une tendance à l'adoption de restrictions supplémentaires des captures, une utilisation plus large de l'approche préventive en matière d'environnement et une mise au point de programmes favorisant le rétablissement des stocks les plus gravement touchés. Le parasite *G. salaris* continuait de se répandre ce qui soulignait d'autant plus l'importance du travail du CPAP en ce qui concerne les introductions et transferts. Aux États-Unis, le saumon atlantique avait été ajouté à la liste des espèces en danger d'extinction, conformément à la loi régissant cette question (*Endangered Species Act*). Quant au Canada, des préparations étaient en cours pour inclure les stocks de saumons atlantiques de la Baie de Fundy intérieure à la liste des espèces en danger au terme de la loi régissant la question des Espèces en danger d'extinction (*Species at Risk Act*).

La Norvège a présenté un document, CNL(03)31, portant sur la désignation de rivières et de fjords à saumons nationaux.

5.2 **L'approche préventive dans le cadre de la gestion du saumon**

(a) Rapports sur les progrès réalisés dans l'application du Cahier des charges dans le cadre de la gestion des pêcheries de saumon nord atlantique

Afin d'aider les Parties signataires de l'OCSAN et les autorités appropriées à appliquer l'approche préventive à la gestion des pêcheries de saumon nord atlantique, le Conseil avait adopté un Cahier des charges. Le Conseil avait demandé aux gestionnaires, de mettre ce Cahier des charges en application, conjointement avec tout individu ou organisme concerné par les rivières à saumons, immédiatement, sans perte de temps. Des rapports sur les progrès réalisés dans la mise en application du Cahier des charges, s'appuyant sur les renvois d'informations effectués par les Parties, furent présentés, CNL(03)14 (annexe 14) et CNL(03)33 (annexe 15).

L'Islande a présenté un exemple d'application de ce Cahier des charges à la gestion des stocks de saumons dans la rivière Vesturdalsa, CNL(03)36. La Norvège a également présenté un document, CNL(03)45, portant sur l'application de l'approche préventive à la gestion des pêcheries de saumon atlantique en Norvège. L'Union européenne a présenté un document, CNL(03)41, décrivant les pêcheries de saumon de l'UE.

Bien que cela faisait moins d'un an que le Cahier des charges avait été adopté, le Président a pris acte du fait qu'on avait enregistré quelques premiers progrès dans sa mise en application, dans l'évaluation des effets des mesures de gestion et dans l'introduction d'initiatives cherchant à rectifier le problème du manque ou de l'absence d'abondance. Le Conseil a accueilli favorablement cette évolution. Un groupe de travail *ad hoc* chargé de l'approche préventive avait étudié comment le Cahier des charges avait été utilisé et avait conclu que, même si les Parties s'en servaient, dans l'ensemble, pour enregistrer les décisions prises, certaines s'en servaient aussi pour guider les gestionnaires dans leurs décisions de gestion, CNL(03)42. Plusieurs Parties avaient même préparé leurs propres conseils sur la façon dont ce Cahier des charges pouvait ou devait être utilisé. L'opinion était que ces deux formes d'application étaient valables et le groupe était d'avis que le Cahier des charges ne nécessitait aucune modification.

Le Conseil a convenu que le renvoi d'informations sur l'utilisation du Cahier des charges, que les Parties effectuaient chaque année, se fasse selon le format suivant :

(i) fournir un résumé des pêcheries auxquelles le Cahier des charges a été appliqué, indiquant si celui-ci a été employé comme guide dans la prise de décisions de gestion, ou comme façon de consigner lesdites décisions ;

(ii) indiquer où et comment les formulaires du Cahier des charges, une fois remplis, sont compilés et conservés, et fournir chaque année, lors du compte rendu, un exemple d'application ;

(iii) apporter des commentaires sur la façon dont les gestionnaires ont trouvé le Cahier des charges utile et suggérer comment celui-ci pourrait être amélioré ;

(iv) fournir un exemplaire de tout conseil supplémentaire offert sur l'utilisation du Cahier des charges.

(b) Rapports sur les progrès réalisés dans l'élaboration et la mise en place de programmes de protection et de restauration de l'habitat

Lors de sa Dix-neuvième réunion annuelle, le Conseil avait organisé une séance spéciale sur la protection et la restauration de l'habitat. Une présentation a été faite du rapport de cette séance, CNL(03)15.

Le programme d'actions OCSAN, adopté par le Conseil en 2001, qui vise à faciliter l'application de l'approche préventive à la protection et la restauration de l'habitat du saumon atlantique, a pour objectif de maintenir et, dans la mesure du possible, d'accroître la capacité de reproduction actuelle du saumon atlantique. Cet objectif est censé être atteint par l'élaboration et la mise en pratique, par les Parties signataires et leurs juridictions appropriées, de programmes étendus de protection et de restauration de l'habitat du saumon. Afin de pouvoir évaluer et améliorer la façon dont on progressait vers la satisfaction de cet objectif, le programme d'actions propose de créer des inventaires de rivières. Les Parties avaient convenu de faire un rapport sur l'avancement des programmes concernant l'habitat et sur les progrès réalisés dans la création d'inventaires. À cette fin, un formulaire permettant de standardiser le processus de compte-rendu avait été mis au point par le Secrétariat. Ce formulaire avait été utilisé à titre d'essai pour les renvois d'informations de 2003. Une présentation des premiers renvois effectués en utilisant le formulaire a été faite, CNL(03)16 (annexe16) et CNL(03)34 (annexe 17). On nota un progrès dans l'établissement de programmes visant à protéger et restaurer l'habitat, dans la création de programmes de surveillance permettant d'évaluer l'efficacité de ces programmes et dans l'élaboration d'inventaires de rivières à saumons. Le Conseil a accueilli favorablement ces nouvelles. Le Conseil a accepté le formulaire de compte-rendu à utiliser par les Parties lors de leurs prochains renvois d'informations.

Le Président a mentionné que certains États membres de l'UE (le Danemark, la France, l'Espagne et le Portugal) avaient omis d'effectuer les renvois d'informations conformément aux exigences du Cahier des charges et du programme d'actions sur l'habitat. Le représentant de l'UE s'est engagé à obtenir des renvois complets.

(c) Rapport du Comité permanent chargé de l'approche préventive sur l'application de l'approche préventive à la question des introductions et transferts, de l'aquaculture et des transgéniques

Le Président du CPAP, M. Jacque Robichaud, a présenté le rapport du Comité, CNL(03)17 (annexe 18). En réponse aux inquiétudes concernant les dangers que présentaient l'aquaculture, les introductions et transferts et les transgéniques pour les stocks de saumons sauvages, le Conseil et les Commissions de l'OCSAN avaient convenu de cinq accords visant à en minimiser les impacts. Ces accords avaient tous, à l'exception des Orientations sur le confinement physique du saumon d'élevage, été élaborés avant que l'OCSAN et ses Parties signataires n'adopte l'approche préventive. La tâche du CPAP, lors de sa quatrième réunion, tenue à Williamsburg, en Virginie, avait été d'examiner à nouveau ces cinq accords et d'établir si des modifications et des mesures supplémentaires étaient nécessaires pour garantir leur cohérence avec l'approche préventive. Le CPAP avait proposé au Conseil de regrouper l'ensemble des accords existants en une seule Résolution « générique » dont le texte serait modifié de façon à inclure des points sur la charge des preuves, l'évaluation des risques, les mesures atténuantes et de redressement, la mise en application, et le processus de compte rendu. Une nouvelle annexe comprenant des directives sur le repeuplement avait été ajoutée.

Le Conseil avait déjà reconnu la nécessité de consulter l'ensemble des groupes d'intérêts sur les recommandations du CPAP. Le projet de résolution avait ainsi été mis immédiatement à la disposition des éleveurs par l'intermédiaire du Groupe de liaison. Les commentaires de l'Association Internationale des Eleveurs de Saumons (AIES) avaient été présentés, CNL(03)30.

Le représentant du Canada fit une déclaration, CNL(03)50 (annexe 19), qui suggérait qu'il serait bon de ne pas figer le texte de la Résolution de Williamsburg afin de pouvoir l'ajuster en tenant compte des tous derniers développements scientifiques ou autres. Ceci permettrait en effet de garantir que tout effet nuisible sur les stocks de saumons atlantiques sauvages (nouveau ou potentiel) soit abordé. Le représentant du Canada a indiqué que ses consultations prendraient du temps, mais qu'il appuyait les principes de la Résolution.

À la suite de révisions apportées aux annexes 1 (Définitions) et 4 (Directives sur le repeuplement du saumon atlantique), le Conseil a adopté la Résolution de Williamsburg, CNL(03)57 (annexe 20).

Le Conseil reconnaissait que la Résolution de Williamsburg aurait à évoluer, à l'avenir, à la lumière des faits concernant sa mise en pratique, en fonction du processus de consultations, de l'amélioration du savoir scientifique en ce qui concernait les impacts de l'aquaculture, des introductions et transferts et des transgéniques sur les stocks sauvages et en fonction du développement des mesures prises pour minimiser ces effets. Le Secrétaire fut prié de répondre à la lettre de l'AIES.

(d) Rapport de l'atelier technique sur l'élaboration d'un cadre visant à évaluer les valeurs socio-économiques liées au saumon atlantique sauvage

Le Conseil avait déjà accepté la nécessité d'étudier la façon dont on pouvait tenir compte des aspects socio-économiques dans l'application de l'approche préventive sans pour autant en réduire l'efficacité. Lors de sa dix-neuvième réunion annuelle, le Conseil avait approuvé un mandat en vue d'une réunion du CPAP qui porterait sur cet aspect de l'approche préventive. Ce mandat proposait, en premier lieu, d'élaborer un cadre, ou modèle, acceptable au niveau international, qui servirait à évaluer les valeurs socio-économiques du saumon atlantique. Cette tâche avait été entreprise par un atelier technique qui avait eu lieu à Edimbourg, en janvier 2003 sous la direction du Secrétaire. Celui-ci en présenta le rapport, CNL(03)18 (annexe 21).

La valeur présentée par le saumon atlantique sauvage comporte plusieurs aspects, dont ceux associés aux pêcheries commerciale, de loisir et de subsistance. Outre ceci, cependant, on note également des valeurs liées à l'existence même du saumon. Ces valeurs sont difficiles à mesurer mais sont si étendues qu'elles pourraient dépasser de beaucoup l'importance donnée aux pêcheries. L'atelier s'est efforcé d'étudier l'ensemble des ces valeurs et d'apporter des recommandations sur la façon dont chacune pourrait être évaluée. Un cadre – ou modèle a été conçu spécifiquement pour mesurer les valeurs socio-économiques des stocks sauvages.

Le Conseil a convenu qu'en second lieu, les Parties signataires devraient s'assurer que les informations fournies dans le Tableau 2 du document CNL(03)18 étaient complètes et que toute modification nécessaire à ce tableau, accompagnée d'une bibliographie, devrait être envoyée au Secrétariat dans les plus brefs délais. Il importait d'inclure, dans la mesure du possible, dans ces informations les études menées par les instituts de recherche, les établissements d'éducation et les consultants. On devrait, ensuite, envoyer des études de cas au Secrétariat, illustrant comment les facteurs socio-économiques avaient été incorporés dans les décisions portant sur la gestion : des pêcheries ; de l'habitat ; de l'aquaculture, des introductions et des transferts et des transgéniques ; et des captures accidentelles. Ces études de cas formeraient la base d'une étude sur document visant à formuler des méthodologies standard. Celles-ci seraient examinées lors d'un atelier technique qui aurait lieu avant la fin de mars 2004. Cet atelier aurait pour tâche d'élaborer un cahier des charges qui faciliterait l'inclusion des facteurs socio-économiques dans les décisions de gestion prises dans le cadre de l'approche préventive.

(e) Mesures à prendre à l'avenir dans le cadre de l'application de l'approche préventive

Le Conseil a étudié les mesures à prendre à l'avenir dans le cadre de l'approche préventive, CNL(03)19. Au cours des dernières années, l'OCSAN avait réalisé d'importants progrès en ce qui concernait la façon dont l'Organisation avait perfectionné son raisonnement à propos de l'application de l'approche préventive. Les tâches principales du Programme d'actions étaient maintenant bien en cours. Ce qui restait à examiner par le CPAP était les prises accidentelles de saumons (voir paragraphe 5.6) et les programmes de repeuplement des stocks.

Un programme de repeuplement des stocks, consistait, selon la définition du Conseil, en un ensemble de mesures de gestion, dont notamment une amélioration de l'habitat, un contrôle de l'exploitation et un exercice de repeuplement, mesures conçues pour restaurer les stocks au-dessus de leur limite de conservation. Ces mesures de gestion sont prises par le Conseil dans le cadre de l'application de l'approche préventive. Le Conseil reconnaissait cependant qu'il pourrait s'avérer utile d'élaborer des directives pour les programmes de repeuplement. Le Groupe de travail *ad hoc,* chargé de l'approche préventive, a formulé des directives préliminaires sur l'utilisation des programmes de repeuplement dans le cadre d'une gestion préventive des stocks de saumons, CNL(03)54 (annexe 22). Le Conseil a adopté ces directives préliminaires. Le Conseil a par ailleurs reconnu que le Groupe puisse avoir besoin de correspondre ou, si nécessaire, d'organiser une réunion pour affiner ces directives préliminaires. Les nouvelles directives devraient être mises à la disposition des Parties bien avant la Vingt et unième réunion annuelle.

Le représentant des États-Unis a présenté une vue d'ensemble du projet de base de données de l'OCSAN portant sur les rivières à saumons atlantiques et sur l'habitat de cette espèce, CNL(03)38. Selon le Programme d'actions pour la protection et restauration de l'habitat, il est proposé que des inventaires de rivières soient compilés. Les États-Unis avaient commencé à créer une base de données qui contiendrait les données des rivières des États-Unis et seraient reconnaissants de toute information à ce sujet de la part des autres Parties. Le Conseil a convenu de former un groupe de travail qui s'attacherait au développement de cette base de données par correspondance. Les États-Unis ont accepté de coordonner le travail.

Le Président a sincèrement remercié les Parties pour leur travail et coopération dans le domaine de l'application de l'approche préventive. Il reconnaissait qu'il restait beaucoup à faire, surtout en ce qui concernait plus précisément la mise en application de l'approche préventive et le processus de compte-rendus, mais a indiqué qu'en général on avait fait de grands progrès en ce qui concernait l'application de l'approche préventive. À son avis, l'OCSAN se trouvait en tête de toutes les Commissions de pêcheries dans la façon dont l'Organisation appliquait l'approche préventive à son travail afin de conserver le saumon.

5.3 Captures non déclarées

Le Secrétaire a présenté le document CNL(03)20 (annexe 23) résumant les renvois effectués par les Parties. Ces renvois indiquaient qu'en 2002, l'estimation des captures non déclarées était de l'ordre de 838 à 1,158 tonnes. Le Conseil a accueilli favorablement les informations contenues dans le document CNL(03)20 qui présentait les données avec transparence. Ayant noté la continuité des progrès réalisés, le Conseil a néanmoins souligné la nécessité de prendre des mesures supplémentaires pour réduire au minimum le niveau des captures non déclarées. Le Président a fait remarquer que la présentation transparente des données de captures non déclarées et l'introduction de mesures supplémentaires visant à réduire au minimum ces captures non déclarées s'inscrivaient dans le cadre de l'approche préventive et devaient être considérés comme un autre volet de l'adoption par l'OCSAN de l'approche préventive.

5.4 Compte rendu de la Commission internationale de recherche sur le saumon menée en coopération

La Commission internationale de recherche sur le saumon menée en coopération fut établie par le Conseil en 2001 pour diriger et coordonner un programme de recherche. Ce programme de recherche était censé identifier et expliquer les causes de mortalité marine du saumon atlantique et la possibilité de contrer cette mortalité. La Commission avait tenu sa réunion inaugurale en 2001. Le Président de la Commission, M. Jacque Robichaud, a présenté le rapport de cette première réunion, CNL(03)21, ainsi qu'un compte rendu verbal de la seconde réunion de la Commission. Le Conseil a pris acte des progrès réalisés par la Commission dans sa formulation de procédures administratives, dans sa création et sa mise à jour continue d'un inventaire de recherche, dans l'identification des lacunes et des priorités en matière de recherche, dans l'identification de situations permettant d'améliorer la coordination de la recherche et en mettant au point une approche pilote pour collecter des fonds. Le Président de la Commission a indiqué que six nouveaux projets avaient été ajoutés à l'inventaire depuis l'an dernier, dont deux qui concernaient l'évaluation des prises accidentelles, sujet qui avait déjà été établi comme étant de haute priorité en matière de recherche. La totalité des dépenses allouées aux projets figurant dans l'inventaire s'élevait à environ 4,2 millions de livres sterling, quoique l'on ne disposait d'aucune indication de coût pour cinq de ces projets. La Commission avait convenu que pour mieux refléter le travail qu'elle accomplissait, il serait préférable qu'elle change de nom et qu'elle adopte ainsi le nom de Commission internationale de recherche sur le saumon atlantique. Le Conseil a appuyé l'approche choisie par la Commission pour collecter des fonds, telle qu'elle avait été esquissée dans son rapport. De ce fait, le Conseil a suggéré à la Commission de commencer à collecter des fonds afin de financer les lacunes en matière de recherche. Les Parties ont confirmé des contributions au fond qui s'élevaient à plus de 100 000 livres sterling. Le Président a souligné que pour être positive, la collecte de fonds dépendait grandement de la façon dont les Parties apporteraient leur soutien en déterminant des sources de financement et en effectuant les présentations nécessaires.

5.5 **Pêche à des fins de recherches scientifiques dans la zone de la Convention**

Antérieurement à la Réunion annuelle, le Conseil avait approuvé une proposition de pêche menée à des fins de recherches scientifiques, provenant de la Norvège et qui devait avoir lieu entre 2003 et 2007. Le représentant de la Norvège a présenté un bref compte-rendu verbal sur la pêche menée à des fins de recherches en Norvège, au cours de l'année 2002.

5.6 **Prises accidentelles de saumons atlantiques**

La possibilité de prises accidentelles de post-smolts de saumons dans les pêcheries de poissons pélagiques, tel que le maquereau, dans l'Atlantique du Nord-est avait déjà suscité des inquiétudes au sein du Conseil. Les estimations fournies par le CIEM pour 2002, bien que préliminaires, suggéraient que les prises accidentelles étaient potentiellement importantes. Le Conseil a exprimé ses inquiétudes à propos de ce niveau de prises accidentelles. Il a également reconnu la nécessité d'affiner les estimations initiales. Le Conseil avait recommandé que la Commission internationale de recherche sur le saumon accorde une plus haute priorité aux propositions de projets concernant l'évaluation des prises accidentelles.

Le CIEM présenta de nouvelles données provenant d'une activité de pêche menée à des fins de recherches scientifiques et de programmes d'observation conduits à bord de navires de pêche commerciale en 2002, CNL(03)8. Il y avait une différence énorme entre la quantité élevée de post-smolts capturés dans la pêche menée à des fins de recherche et le peu de captures accidentelles observées au cours de la pêche commerciale.

Le CIEM a indiqué que cette différence pouvait s'expliquer de plusieurs façons et que le meilleur moyen d'estimer le niveau de captures accidentelles ayant lieu au cours des pêches commerciales était d'observer directement ces pêches et de continuer les études sur la biologie et la distribution marine des post-smolts et des saumons plus âgés. Le CIEM a proposé un certain nombre de recommandations en matière de recherche. Des informations sur les prises accidentelles de saumons furent également présentées par l'Islande, CNL(03)27.

Le Conseil décida que, conformément à l'approche préventive, il :

(i) encouragerait les donations et chercherait à obtenir les fonds nécessaires à la recherche sur les sujets suivants : distribution marine du saumon, chevauchement spatio-temporel du saumon en mer et des pêcheries pélagiques, distribution verticale du saumon et comportement dans les zones d'alimentation et, enfin, prises accidentelles de saumons au cours des pêcheries pélagiques ;

(ii) encouragerait la conduite d'études pilotes sur les ajustements techniques à apporter au déploiement des engins utilisés au cours des pêcheries pélagiques afin de réduire au minimum les prises accidentelles de saumons ;

(iii) passerait en revue les résultats de la recherche mentionnée aux paragraphes (i) et (ii) lors de sa Réunion annuelle de 2005 ou d'une séance spéciale ;

(iv) demanderait, éventuellement, à la lumière des résultats de la recherche mentionnée aux points (i) et (ii) ci-dessus, que les Parties, non Parties et autres Commissions de pêcherie ajustent leurs méthodes de pêche afin de minimiser les captures accidentelles de saumons ;

(v) continuerait de demander au CIEM de fournir des informations sur les prises accidentelles de saumons ayant lieu dans toutes les pêcheries d'autres espèces (existantes ou nouvelles). Il aimerait également recevoir des informations sur les prises accidentelles d'autres espèces dans les engins de pêche au saumon.

Le Conseil a également réitéré sa recommandation à la Commission internationale de recherche sur le saumon atlantique, à savoir qu'il importait que la Commission alloue une haute priorité aux projets d'évaluation des prises accidentelles. Le Conseil est d'avis que l'acceptation des points ci-dessus représentait une adoption de l'approche préventive dans le cadre des captures accidentelles.

5.7 **Effets nuisibles de l'aquaculture sur les stocks de saumons sauvages**

(a) Renvois réalisés dans le cadre de la Résolution d'Oslo

Le Secrétaire a présenté les rapports CNL(03)22 (annexe 24) et CNL(03)37 (annexe 25), portant sur les renvois réalisés conformément à l'article 5 de la Résolution d'Oslo.

(b) Liaison avec l'industrie salmonicole

Le Président, M. James Ryan, a présenté le rapport, CNL(03)23 (annexe 26), de la réunion du Groupe de liaison OCSAN / éleveurs de saumons de l'Atlantique Nord, qui eut lieu à Williamsburg, en Virginie, le 13 mars 2003. Les premiers rapports de la réunion portaient, selon un format convenu d'avance, sur les progrès réalisés en matière d'élaboration et de mise en pratique de programmes d'actions sur le confinement physique du saumon d'élevage. Le Groupe avait accueilli favorablement les progrès réalisés. Un rapport du projet Groupe coopération saumon (SALCOOP) avait également été présenté. Ce compte rendu passait en revue les formes de coopération qui existaient entre les groupes d'intérêt du saumon d'élevage et du saumon sauvage, identifiait d'autres possibilités de coopération et examinait les options quant au financement des projets coopératifs. Il fut proposé qu'un atelier soit organisé en même temps que la prochaine réunion du Groupe de liaison en 2004. Cet atelier porterait principalement sur les initiatives de gestion d'une zone, sur les programmes de restauration, sur le pour et le contre de l'utilisation des saumons stériles en élevage et sur les possibilités d'essais coopératifs. Le Conseil a accueilli favorablement les progrès réalisés par le Groupe de liaison et appuya la proposition d'un atelier. Le Conseil pria le Secrétaire d'entrer en contact avec les éleveurs de saumons de l'Atlantique Nord pour discuter des préparatifs de cette réunion.

Le Président du Groupe de liaison a exprimé son inquiétude à propos du non respect du processus de consultation du Groupe de liaison en ce qui concernait les recommandations du CPAP sur l'aquaculture. Ceci pouvait, selon lui, menacer l'avenir du Groupe. Il a ajouté ensuite, qu'à son avis, le secteur de l'aquaculture faisait l'objet de multiples critiques non justifiées et que la Résolution de Williamsburg pourrait avoir une grande répercussion sur le secteur salmonicole. Le Président a indiqué qu'il était surpris par la présentation du Président du Groupe de liaison de questions qui ne figuraient pas dans le rapport du Groupe de liaison. Le Conseil avait convenu qu'il importait de consulter largement les différents groupes d'intérêts. Il avait également fait remarquer que le secteur aquacole avait été consulté immédiatement après la réunion du CPAP. Pour certains usagers de la ressource, la Résolution n'allait pas assez loin tandis que pour l'AIES, elle pourrait endommager le secteur. Le Président a indiqué que la Résolution ne représentait en grande partie qu'une consolidation des accords actuels, mis à part l'inclusion de quelques nouveaux éléments dont ceux concernant la charge des preuves et l'évaluation des risques. Une nouvelle section sur les directives concernant le repeuplement avait également été crée. Il remercia le Président du Groupe de liaison pour sa présentation et sa participation à la Réunion annuelle ainsi que pour le travail du Groupe de liaison qui avait grandement progressé sous sa direction, surtout en ce qui concernait la possibilité de projets coopératifs.

5.8 **Saumon transgénique**

Lors de sa Quatorzième réunion annuelle, le Conseil avait exprimé ses préoccupations quant aux risques posés par le saumon transgénique et avait adopté les orientations de l'OCSAN recommandant l'application de mesures concernant le saumon transgénique, conçues pour éviter les effets nuisibles sur les stocks sauvages. Selon ces orientations, les Parties avaient convenu d'informer le Conseil de toute proposition qui permettrait l'élevage de salmonidés transgéniques, donnant les détails de la méthode de confinement prévue et des autres mesures prises pour protéger les stocks sauvages.

Le représentant des États-Unis informa le Conseil d'une demande, aux États-Unis, de vente et d'élevage de saumons transgéniques adressée au Bureau américain de contrôle pharmaceutique et alimentaire [*US Food and Drug Administration* (FDA)], en cours d'autorisation. Il semblerait que les documents de la demande étaient presque tous prêts à l'exception d'une analyse des risques posés à l'environnement. La société en question avait indiqué son intention de mettre les rapports qui servaient de base à sa demande, à la disposition du public. Une fois les questions de santé humaine et de sécurité complètement réglées, il semblerait que la FDA envisage également de prendre une décision à propos du marketing (au lieu de l'élevage) du saumon transgénique aux États-Unis. Cette décision pourrait être prise à la fin de l'année ou au début de 2004. La FDA était en consultation avec le Service américain du poisson et de la faune (*US Fish and Wildlife Service*) et le Service national des pêches marines des États-Unis (*US National Marine Fisheries Service*) à propos de la possibilité d'effets nuisibles sur les stocks de saumons sauvages. Le processus de consultation ne pouvait s'effectuer sans l'analyse des risques posés à l'environnement. Les États-Unis ont convenu de mettre cette analyse des risques à la disposition des Parties de l'OCSAN, afin que l'OCSAN et ses Parties signataires puissent donner leur opinion à la FDA.

5.9 **Mortalité liée aux prédateurs**

Une présentation a été faite des informations portant sur la mortalité liée aux prédateurs fournies par les Parties signataires et compilées par le Secrétariat, CNL(03)24. Un résumé des effets de la prédation marine sur les stocks des États-Unis fut également communiqué, CNL(03)39. Le Président a suggéré qu'il était temps de face à la question de la mortalité liée aux prédateurs. Le Conseil a convenu, qu'en premier lieu, il s'efforcerait de rassembler toutes les informations disponibles sur ce sujet de façon à en préparer un compendium pour la réunion de 2004. Il fut demandé à chaque Partie de nommer un coordinateur pour ce travail.

5.10 **Pêcheries de saumon à St. Pierre et Miquelon**

Au cours des dernières années, les captures à St. Pierre et Miquelon avaient suscité des inquiétudes grandissantes au sein de la Commission Nord-américaine et du Conseil. Ces captures, bien que basses, augmentaient à un moment où l'abondance des stocks Nord-américains était l'objet de grandes inquiétudes et où des restrictions étaient introduites dans tout l'Atlantique Nord-Ouest. L'année dernière, ayant reconnu qu'il était nécessaire d'obtenir des informations scientifiques supplémentaires sur les stocks mixtes exploités à St. Pierre et Miquelon, le Conseil avait adopté une Résolution. Cette Résolution demandait aux Parties signataires d'encourager la France (pour St. Pierre et Miquelon) à coopérer avec l'OCSAN sur le lancement d'un programme d'échantillonnage scientifique de la pêcherie à St. Pierre et Miquelon en 2003.

Le Président a annoncé qu'il avait très récemment reçu une lettre de la France (pour St Pierre et Miquelon). Celle-ci mentionnait l'intention de la France à conduire un programme d'échantillonnage en 2003, CNL(03)32 (annexe 27). Le Conseil a accueilli favorablement ce projet. Le Conseil a convenu qu'il serait bon pour le Président et le Secrétaire de répondre en indiquant combien ils appréciaient ce développement. Il serait par ailleurs pertinent, d'offrir, en échange de l'esprit de coopération manifesté par la France, l'entière coopération de l'OCSAN par le biais de la contribution de ses scientifiques.

5.11 **Rapport sur les initiatives prises au sein de la FAO (OAA) pertinentes à l'OCSAN**

Le Conseil a pris acte d'un rapport sur les initiatives prises au sein de la FAO, pertinentes à l'OCSAN, CNL(03)25.

5.12 **Compte rendus sur les mesures de conservation prises par les trois Commissions régionales**

Le Président de chacune des trois Commissions régionales a soumis au Conseil un compte rendu des activités des Commissions respectives.

6. Divers

6.1 Le représentant de l'Union européenne a recommandé vivement à l'OCSAN de s'acquitter de sa part des honoraires du Président du CCGP auprès du CIEM. Le

Conseil a approuvé cette demande. Le Budget de 2004 et le Programme des contributions furent amendés en conséquence. Ces documents, amendés, CNL(03)52, figurent à l'annexe 28.

6.2 Le Conseil a demandé au Secrétaire d'initier les négociations avec le CIEM sur un nouveau Protocole d'accord, conformément au mandat défini par la Commission financière et administrative. La façon la plus efficace de procéder serait de contacter les autres « Commissions-clientes » du CIEM et d'initier les négociations en coopération avec ces organismes, utilisant, dans la mesure du possible, leurs projets d'accords en tant que guide.

7. Date et lieu de la prochaine réunion

7.1 Il fut indiqué que des invitations seraient bientôt reçues pour les réunions du 7-11 juin 2004 et du 6-10 juin 2005. Le Conseil a décidé de tenir sa Vingt et unième réunion annuelle, qui aurait lieu au cours de sa Vingtième année d'existence, soit dans un lieu suggéré par invitation, soit à Edimbourg. On prévoyait que cette question serait résolue dans les 15 jours à venir et que le Secrétaire en informerait les Parties.

7.2 Le Conseil a décidé de ne pas organiser de Séance spéciale au cours de sa Vingt et unième réunion annuelle, mais de réserver, à la place le premier jour de la Réunion aux réunions de la Commission internationale de recherche sur le saumon atlantique, de la Commission financière et administrative, et de tout autre groupe de travail qui aurait besoin de se rencontrer à cette période.

8. Compte rendu de la réunion

8.1 Le Conseil a adopté le compte rendu de la réunion, CNL(03)51.

9. Communiqué de presse

9.1 Le Conseil a approuvé un communiqué de presse, CNL(03)56 (annexe 29).

Nota : La liste intégrale des documents du Conseil figure à l'annexe 30.

ANNEX 1

Message of Encouragement for the Work of NASCO from His Royal Highness The Prince of Wales

I am very pleased to send a message of encouragement on the occasion of the Twentieth Annual Meeting of the Council of the North Atlantic Salmon Conservation Organization. It is most appropriate that this gathering should be taking place in Edinburgh, where the inaugural meeting was held in 1984, and I must declare a double interest: in my deep concern for the well-being of the wild salmon and my enthusiasm for Scottish salmon rivers which have given me so much pleasure over the years. The Council meets at a time when, despite many improvements in conservation practices, the state of salmon stocks around the North Atlantic continues to give rise to anxiety.

NASCO, as the sole inter-governmental forum for discussion and agreement on the preservation and management of these stocks, bears a weighty responsibility. The main initial work of the Organization lay in regulating the extent of the Greenland and Faroes off-shore salmon fisheries – the only two permitted to operate under the terms of the North Atlantic Salmon Convention. This scope has long been extended to cover a whole range of factors that can affect the life-cycle of this most remarkable fish, whose value, in both economic and social terms, far outweighs its intrinsic worth as a food source.

I am especially glad to see that NASCO is addressing seriously the need for measures to minimise the impact of aquaculture on the wild fish, and is encouraging liaison between the industry and those concerned with wild fisheries. Current active co-operation in Scotland, involving Government, fish farmers and wild fishery interests, seeks the development of mutual understanding of the problems and effective action and regulation to address them, but we need to do much more in all salmon-producing countries if we are to be sure that we can safeguard the wild stocks. The threats from parasites and diseases are becoming increasingly clear, and recent genetic studies indicate that there is a real risk of irreversible damage to wild salmon from interbreeding after continuing escapes of farmed fish. The Precautionary Approach demands that appropriate action should be taken now.

We are all aware that the proportion of migrating salmon that die at sea has been increasing over the years, and that there is an enormous gap in our knowledge of the fate of salmon during this mysterious phase of their life. It is most encouraging that NASCO has set up an international Board to co-ordinate and facilitate co-operation between individual nations in mounting this very expensive field of research and investigation. I hope that the countries in the Organization will be able to contribute substantially to the establishment and implementation of an early programme to increase our knowledge of the causes of this increase in mortality. We need to determine where and how effective measures – in respect, for example, of the by-catch of migrating smolts in near-surface pelagic fisheries for other species – may be employed to reduce the toll.

I do wish the delegates to this meeting, and all other participants, an enjoyable as well as a productive stay in Edinburgh, and I look forward keenly to learning of the results of your deliberations.

HRH The Prince of Wales

ANNEX 2

Welcoming Address by Dr Paul Brady, Scottish Executive

Mr President, Distinguished Delegates, Observers, Members of the NASCO Secretariat, Ladies and Gentlemen: my name is Paul Brady, Head of Fisheries and Rural Development in the Scottish Executive.

We are proud and pleased to host this meeting on behalf of the European Union in this, the home of NASCO Headquarters. On behalf of Scottish Ministers and the Executive I warmly welcome you to Edinburgh. But my Minister, Allan Wilson, will be giving you a somewhat warmer and hopefully enjoyable welcome tonight at Edinburgh Castle.

Since its creation four years ago, the Scottish Parliament has attached a great deal of importance and priority to fisheries management – indeed the very first piece of legislation to be passed was a Salmon Conservation Act. We in Scotland are very conscious of the need to protect the beautiful environment and diverse natural assets with which we have been so well endowed; and that where natural resources are exploited, this is done in a sustainable way. This goes as much for salmon as for any other resource and we count ourselves fortunate in still have salmon populations in so many of our Scottish rivers. But we are well aware that we have a good deal less than we used to. We are, therefore, striving to do everything within our control to ensure that salmon are managed sustainably, so that future generations will be able to enjoy the wonders of salmon fishing and the beauty of salmon leaping in our waters.

But of course we cannot do it all on our own, nor can any of us individually involved in this meeting today. I know that NASCO has played a major role over the last two decades in securing international co-operation in salmon management. We are all grateful for what has been achieved but recognise that more needs to be done. Within Scotland, the UK and indeed the European Union, we are fully committed to adopting a more coherent and inclusive approach to environmental management. Quite apart from any measures directed specifically at salmon, the EU Water Framework Directive will require all whose activities impact on the aquatic environment, and the plants and animals that live there, to work more closely together, each conscious of his neighbours' needs.

I can see from scrutiny of the papers for the meeting that you have a very full workload including consideration of many important issues – application of the Precautionary Approach; introductions and transfers; impacts of aquaculture; predation; and international co-operative research to name a few.

But I hope you will find time during your stay here to enjoy the beautiful city of Edinburgh of which I am such a proud citizen – and perhaps a few opportunities to enjoy our national drink – and I don't mean tea!

Once again, welcome to Scotland and hopefully a productive and enjoyable Twentieth Annual Meeting of NASCO.

ANNEX 3

Opening Statement made by the President

Distinguished Delegates, Ladies and Gentlemen:

Firstly, I would ask Captain Read to please transmit our sincere thanks to His Royal Highness The Prince of Wales for his message of encouragement.

I would also like to thank Dr Brady for his very kind welcome, and let me say what an enormous pleasure it is to me as President, and I have no doubt to all of our delegates, to be back in our home city, Edinburgh. It has a special significance for us to be here in this beautiful city and I know that the views from this room will inspire us during a week of very heavy work. Let me make just one thing clear - although this is our Twentieth Annual Meeting it is not our Twentieth Birthday. That is next year!

Shortly I will give an opportunity to each member Party of NASCO to make Opening Remarks, as well as the Government of Ukraine and the International Baltic Sea Fishery Commission. Finally, I will invite our colleagues among the NGOs to also make Opening Statements. But first I want to tell you that we have some very important items before us this week. In spite of all the actions we have taken over the years and in spite of all the sacrifices that have been made, the wild salmon are not returning to our rivers in the numbers that they once used to. As a matter of fact catches are still at record lows, though I take great comfort from the fact that this is partly because of our strong controls on fishing. I note that catches have decreased by 15% since last year and are the fourth-lowest since 1960. I welcome this as an indication of tough measures taken in fisheries (such as closure of mixed fisheries in Canada, continued curtailment of Greenland fisheries, reduction of effort, delaying opening seasons in the UK). As well, credit should be given to anglers for the increased use of the catch and release technique. We are also aware of plans to further curtail harvest and encourage all Parties to continue to do so. I applaud the courage of Canada and the US in taking difficult decisions to list certain stocks as endangered, with wide repercussions. I am delighted to learn that Norway has designated 37 salmon rivers and 21 fjords for irrevocable protection. Russia took firm action in closing fishing in the Archangel Region due to a particular problem with unreported catches. I acknowledge Iceland on their initiative on early work on reporting on the impact of by-catches in fisheries. These are encouraging signs, but the salmon is still in difficulties.

Our main concerns this week will be the further progress that we must make with the Precautionary Approach. Ladies and Gentlemen, using our agreed definitions, this means that we must be sure of avoiding irreversible change, and that we have the obligation to safeguard the interests of future generations. We must not allow anything to happen that could prejudice the rights of our children and grandchildren.

We are already in the midst of introducing the Precautionary Approach to the management of salmon fisheries and to habitat management. I will be looking forward with interest to hearing of the progress made in implementing our agreements in relation to these two aspects of the Precautionary Approach. Now at this meeting we come to important issues which are the impacts of aquaculture, of introductions and transfers and of transgenics. How can these activities be managed without the risk of irreversible change to wild stocks? A big challenge but one that we must face. I have to tell you that in this regard I am very concerned, in spite of some radical action undertaken, that in the North Atlantic there are still large numbers of fertile salmon that have escaped from salmon farms and that are interbreeding with the wild stocks in our rivers. That runs the risk of damaging 10,000 years of genetic diversity.

That is just one example but we must also ensure that, for example, well intentioned attempts at re-stocking do not also do damage and that introductions and transfers of fish do not spread disease and parasites. We must bear in mind the very serious damage caused by the parasite *G. salaris* and take firm action to prevent its further spread. Poorly planned movements of live salmonids will further undermine a resource which is under threat. These are major problems but we are trying to solve them.

The other areas of significance in this meeting are how to measure the social and economic values of the wild salmon. This is very important if the wild salmon are to be given their correct weighting when there are conflicts, as there often are, with other industries or activities. I am eager to see this aspect of our work progressed. I will challenge you to resolve these last issues while we are here this week, to pilot them all and maybe report at a Special Session next year on progress, not only on habitat but on socio-economics, introductions and transfers and transgenics. Let's be the first international forum not only to have a Precautionary Approach framework but also to implement it, reporting on concrete action and results.

Then there is the work of our new International Atlantic Salmon Research Board, just launched and about to start its work. I am very keen to see how we can get this off the ground and, in the next months, generate new funds. We shall need all your assistance on this because the funds needed are substantial.

I have just picked out a few Council issues here but when you look at the Agenda you will see many others that will need to be addressed in a rather short time. You will all be aware of the work to be done in the three Commissions. Ladies and Gentlemen, the business before us is very serious. So I appeal to you all to do your utmost to protect this wonderful species. I shall be pressing you all quite hard this week but I know that the spirit of NASCO will prevail. We are fortunate in this Organization in having a very positive spirit of goodwill and international cooperation. We have shown that we can overcome difficulties and make progress and I am sure that this week will be no exception.

With this, I would like to hand over to the Parties for the Opening Statements.

ANNEX 4

Opening Statements made by the Parties

Opening Statement made by Canada

Mr. President, Distinguished Delegates, Observers, Ladies and Gentlemen:

On behalf of the Canadian delegation, I want to say that we are very happy to be here in Edinburgh, the city that writer Robert Louis Stevenson said "is what Paris ought to be". On the occasion of NASCO's twentieth meeting, our hosts have made us feel most welcome in this beautiful city and I want to thank the Secretariat for their efforts.

Canada has put major emphasis on developing a Precautionary Approach in recent years. Various codes of practice for responsible fishing have been drafted in conjunction with provincial governments and stakeholders including aboriginal and sports fishermen, and the aquaculture industry. Generally, the Precautionary Approach that NASCO has developed in recent years is consistent with Canada's policy in that respect.

I mentioned aquaculture. In this area, the Department of Fisheries and Oceans in Canada has a dual role. In conjunction with the industry we work on enabling aquaculture to develop and flourish in a responsible manner through initiatives such as our National Code of Introductions and Transfers of Aquatic Organisms. With respect to wild Atlantic salmon, our responsibility and actions are clear. Conservation is paramount.

On the habitat side, the provinces, federal government and individuals have worked hard to conserve and protect salmon habitat. For example, the province of Quebec has declared a number of Atlantic salmon rivers conservation reserves to preserve aquatic ecosystems. In the province of New Brunswick, the provincial and federal governments are working to ensure road crossings do not impede salmon passage. In the province of Newfoundland and Labrador, habitat protection includes addressing potential impacts of logging roads. The federal government is also working with the provinces and non-government organisations to develop community stewardship programs to conserve and restore productive fish habitat. For example, the Atlantic Salmon Federation has a network of 40,000 volunteers working on habitat initiatives. We have tabled Canada's report on habitat and it lays out in more detail our policies and approaches for protecting habitat.

Atlantic salmon represent an important resource for Canada, one that is worth protecting for the benefit of future generations.

NASCO was created to promote conservation, restoration, enhancement and rational management of salmon stocks in the North Atlantic through international co-operation. For the past 20 years or so, NASCO has worked diligently to conserve Atlantic salmon stocks. We have made resolutions and agreements and developed numerous analytical documents and papers during this time. A significant effort has been placed on the Precautionary Approach. Canada has actively and whole-heartedly supported this approach. Promotion of the precautionary principles has been useful in ensuring among Contracting Parties that there is a consistent approach to conservation and management of Atlantic salmon. I believe this process will provide NASCO with a useful long-term strategy. At this meeting we will be discussing the need for future actions on the Precautionary Approach. I would like to stress the importance of concurrently also focusing our efforts on better understanding conditions at sea and what factors impact at sea mortality. Let me describe my concern for urgent action.

Canada has around 675 Atlantic salmon rivers. A number of these rivers still remain unnamed. Many of these rivers are in remote areas accessible only by aircraft or boat. Many of these rivers are in pristine condition. Unfortunately, what is disturbing is that the number of wild Atlantic salmon returning to many of these rivers, including those in pristine condition, are steadily declining. Why?

In most cases it is impossible to point a finger at a specific cause. We can look at the effects of habitat destruction, at the potential impacts of poor aquaculture practises, or at diseases as contributing to the declining salmon returns. But it is obvious that immediate action is needed to reduce the mortality of weak Atlantic salmon stocks. This is a challenge we must face as it is our responsibility to focus on the steps needed to reverse this trend of declining returns.

The establishment of the International Atlantic Salmon Research Board to direct and co-ordinate NASCO Parties' research programs is a welcome initiative to help NASCO determine what are the present and potential impacts of various factors on salmon survival. It would provide a useful forum to co-ordinate and disseminate research by the Parties. Another interesting source of information is the joint meeting held last year on the Causes of Marine Mortality of Salmon. It is interesting to note that the problems of marine survival are not confined to the North Atlantic. Forums such as this can provide useful direction for NASCO initiatives to address the immediate concerns regarding the decline of Atlantic salmon stocks.

Mr. President, I am also Canada's representative to the North Pacific Anadromous Fish Commission. I know that a few years ago there was a meeting of NASCO, NPAFC and other interested Commissions on at-sea mortality. There is currently important scientific research on mortality at sea of wild Pacific salmon. I would suggest that, once the IASRB is well in place and running, another meeting of the Commissions take place to foster a broader understanding of the issues.

Mr. President, Canada looks forward to working with you and all the Parties this week in our collective efforts to conserve and rebuild our precious Atlantic salmon stocks.

Thank you.

Opening Statement made by Denmark (in respect of the Faroe Islands and Greenland)

Mr. President, Distinguished Delegates, Ladies and Gentlemen:

We are pleased to be here in Edinburgh for the Twentieth Annual Meeting of NASCO. We are grateful to the Scottish Executive for hosting this meeting here in the home city of NASCO. Many changes have occurred in NASCO since the First Annual Meeting.

In 1983 we could look back at the 1982 reported catches of approximately 8,400 tonnes of wild Atlantic salmon. And the main issue for our colleagues from other Contracting Parties was how NASCO could reduce the catches taken by the Faroes and Greenland of approximately 1,700 tonnes. The argument went that if only those catches could be reduced, and preferably eliminated, the future of the Atlantic salmon would be secured. Today we can compare with the 2002 figures. The fisheries off Greenland and Faroe are now very close to zero. But in the meantime, total reported catches have declined to 2,600 tonnes. And many salmon stocks are reported outside safe biological limits.

Apparently the Atlantic salmon has been subject to other adverse factors than the so-called interceptory fisheries. Among these we can mention pollution of rivers and seas, habitat damage, and impacts from aquaculture. And due to the farming of salmon, which in 1983 still was an industry in its infancy, but now has reached a total production of approximately 700,000 tonnes, prices of wild salmon have plummeted, making fishing of salmon at sea less economic. Among the factors which have not changed during these 20 years is the continued high dependency of the Faroe Islands and Greenland upon fisheries in general. Now, salmon farming is an important industry in the Faroe Islands.

Among the issues before NASCO at this meeting we can mention a few of particular interest. The figures mentioned above were reported catches. Once again we read that unreported catches are estimated to be approximately 28% of total catches. If salmon fisheries are to be managed properly, this percentage has to be drastically reduced.

A factor which has attracted increased attention is by-catch of post-smolts and pre-adults in pelagic fisheries for other species (mackerel, herring). It causes concern to see the very different estimates made by Norway, Iceland and Russia of the by-catch rates. Clearly, more research is needed in order to find out whether there is a serious problem here, and if so, how to deal with it.

One of the reactions to the apparent reduction of salmon stocks in some rivers has been the proliferation of ‘catch and release’. In our part of the world, where fishing is seen as a means of providing food, we find it difficult to see the ethics of making money by inviting people to catch fish, just for the fun of catching them, where afterwards the fish is released back into the water. But, of course, we do not want to introduce ethics as a subject matter of NASCO. We are prepared to respect other people’s ethical choices, just as we expect them to respect ours. What matters in a NASCO context is the effectiveness of this method upon conservation. The effect will depend upon the survival rate of the released fish, which we do not have much exact knowledge about.

We have great expectations of the newly established International Atlantic Salmon Research Board. We hope that it will greatly improve the possibilities for Parties like the Faroes and Greenland to participate in large-scale salmon research on mortality at sea.

We are looking forward to hearing and sharing views, which may provide inspiration for solutions for rational utilisation of the Atlantic salmon resource.

Opening Statement made by the European Union

Mr. President, Distinguished Delegates and Observers, Ladies and Gentlemen:

It gives me great pleasure to be here in Edinburgh at this, the Twentieth Annual Meeting of the North Atlantic Salmon Conservation Organization. On behalf of the European Union, I would like to express my delight at being back here in the capital of Scotland at the very heart of NASCO and the wild salmon community.

I do not need to repeat what I have said in previous years about the very broad interests of the European Union; you can see for yourselves that the representation in my delegation from the Atlantic side of the European Union is wide. All Member States of the European Union wish to see the furtherance of NASCO's work on wild salmon and, in particular, to see the future of the wild salmon safeguarded.

I must recall what happened in the North-East Atlantic Commission at last year's meeting, when we agreed for the third year not to decide upon a measure for the fishery at the Faroe Islands. At this time, the Faroe Islands made a clear commitment to managing their own fishery (if there was one) in a precautionary manner, taking management decisions with due consideration for the ICES advice. Clearly, this is not a way to manage salmon within NASCO; we must make all efforts to establish a TAC. It is also abundantly clear that it is up to all the relevant Parties to take further and appropriate management measures for the home waters; this is particularly pertinent for the European Union Member States. My delegation can give a clear commitment to taking such measures for these waters. We believe that any measures taken in home and distant waters must complement one another.

I do not have to remind you of the difficulties which have arisen over the years in the context of the West Greenland Commission, and in particular with regard to reaching agreement on suitable regulatory measures for the West Greenland fishery. The advice from ICES for 2003 seems to be ever gloomier. Once again, they are suggesting that there should be no fishery at West Greenland. In fact they have gone further by indicating that even without a harvest at West Greenland we have only a 28% probability of attaining conservation limits in the four northern regions of North America. This should be of great concern to all of us, and in particular to my colleagues on the other side of the Atlantic.

I must therefore urge all Parties represented in the West Greenland Commission, and in particular Denmark (with respect to the Faroe Islands and Greenland), to show the maximum possible restraint in order to support the stock rebuilding process and to ensure the future of the wild salmon on both sides of the Atlantic. We must all act responsibly and take decisions on the basis of the Precautionary Approach.

The Standing Committee on the Precautionary Approach (SCPA) met in Williamsburg in March this year and examined the application of the Precautionary Approach in respect to introductions and transfers, aquaculture and transgenics. The Committee has very ably reviewed the various NASCO agreements relevant to this aspect of the Precautionary Approach and has suggested the adoption of a new "Williamsburg Resolution" consolidating the previous texts. I must congratulate the Committee on its work as it will no doubt move our relationship with the salmon farming industry onto a new footing. But there is clearly still some outstanding work to do on the Precautionary Approach and this we must examine carefully this week, particularly about where we go with the assessment of the social and economic values related to the wild Atlantic salmon and what we do next in our overall examination. Although our work with the Precautionary Approach is an ongoing process, some sort of consolidation may now be necessary for this work.

The Salmon Liaison Group met in Williamsburg immediately after the SCPA meeting and even started an examination of the outcome of the SCPA's work. They have suggested that a workshop be held next year to improve co-operation between the salmon farming industry and the wild salmon interests. I can only support such an initiative from the European Union point of view.

The work related to the establishment of the International Atlantic Salmon Research Board is well on course. My delegation is satisfied with the progress so far and is looking forward to the fund-raising part of the work. I note with great satisfaction the work done on the establishment of the "catalogue" of on-going research. This achievement is a first spin-off and is an important one in satisfying our desire to find out what happens to the salmon at sea.

As a major stakeholder in many of the client commissions in the North Atlantic, the Community has carried out considerable work on formulating a new Memorandum of Understanding for NASCO in regard to ICES. I hope that my delegation can work with the other Parties this week towards the adoption of a new Memorandum of Understanding.

At this week's meeting, we will also be in the presence of a number of non-government organisation observers. I look forward to working with these organisations, which provide input into the work of NASCO. I know that they will continue to work with us constructively in NASCO in the long-term interests of the wild Atlantic salmon.

Mr. President, it is with great delight that I see you presiding over the proceedings this week. May I thank you and all the members of the NASCO Secretariat, and in particular Malcolm Windsor, for all the work that you have done in preparation of this meeting. On behalf of my delegation, may I also give special thanks to the Scottish authorities for all the efforts they have made to make us so comfortable this week in Edinburgh.

Mr. President, Distinguished Delegates, Observers, Ladies and Gentlemen, on behalf of the European Community, may I express the desire of my delegation to work with you all over the next four days in order to achieve the necessary results for NASCO at this Annual Meeting. Once again, I look forward to a very successful meeting.

Opening Statement made by Iceland

Mr. President, Distinguished Delegates, Ladies and Gentlemen:

It is indeed a pleasure to be here in Edinburgh for the Twentieth Annual Meeting of NASCO. As this is my very first meeting I feel that a few introductory remarks are in order. My name is Guðmundur B. Helgason and I am the Permanent Secretary of the Ministry of Agriculture in Iceland. The reason for my being here relates to the fact that formal responsibility for NASCO within the Icelandic administration recently transferred from the Ministry of Foreign Affairs to the Ministry of Agriculture. Primary responsibility in our day-to-day relations with NASCO has traditionally rested with the Directorate of Freshwater Fisheries, which is in fact a subsidiary organization of the Ministry of Agriculture. This will, of course, continue to be the case. We in the Ministry of Agriculture certainly look forward to building on the excellent cooperation that has always existed between Iceland and NASCO.

Another eventful year has passed with a number of NASCO inter-sessional meetings looking at various important issues related to the Atlantic salmon. We had an important meeting early this year looking at the social and economic values of Atlantic salmon to various stakeholders, ranging from the ceremonial and basic food value to “first nations” to the high value of angling as a recreational enterprise. This exercise, which was an integration of biological and economic knowledge regarding Atlantic salmon, was very complex but certainly an important step towards a better understanding of the issue.

The 2002 angling catches in Iceland were 11% up from the previous year but still 3% below the 25-year average since 1975. Since about 18% of the angled salmon were released again, it is getting increasingly difficult to estimate the relationship between angling catches and run sizes and compare catches to previous years. In general, however, the Icelandic salmon stocks seem to be in reasonable condition with the exception of the two-sea-winter component, which has been in decline since the early 1990s. We thus urge all NASCO Parties to exercise prudence in the harvest of two-sea-winter salmon both in mixed and single stock fisheries.

This falls in line with the advice of ICES scientists, who once again warn against any exploitation of non-maturing one-sea-winter salmon at West Greenland, which they consider to be outside safe biological limits. There is clearly a high mortality during the second sea year, although the exact causes have not been identified. It is probably a combination of various factors including adverse feeding conditions and predation as well as by-catches in various fisheries, which are of growing concern. This year we present information on the by-catch of adult salmon in pelagic trawls in connection with herring fisheries on the high seas. Considering the progress in fishing technology in recent years, and the growing size of trawls, this is an issue of high priority and needs to be carefully investigated by our scientists. It should thus be of high importance to NASCO’s International Atlantic Salmon Research Board.

As presented in the annual returns for Iceland, a large share of unreported salmon catches originates in legal net fisheries for char along the Icelandic coast. This year we have issued a regulatory measure banning such fisheries for a two-month period during the peak migration of salmon in large areas in south-western Iceland. This should be an important step in reducing unreported catches of salmon in Iceland.

We are also in the process of introducing a new regulatory measure concerning the strength and integrity of sea cages as well as internal and external inspection of fish farms. This is done in cooperation with the Icelandic fish farming industry as well as the stakeholders concerning wild salmon interests. This will be a major step in protecting wild Atlantic salmon from possible adverse impacts of salmonid fish farms.

Finally, Mr. President, we want to thank the Secretariat for excellent preparation of this meeting. We have a full agenda in front of us and we look forward to a productive meeting in the spirit of good cooperation.

Thank you, Mr. President.

Opening Statement made by Norway

Mr. President, Distinguished Delegates, Observers, Ladies and Gentlemen:

Norway is very pleased to participate at this Twentieth Annual Meeting of NASCO here in Edinburgh.

At the beginning of each year, all regional salmon managers in Norway must present an activity plan for desired achievements. A few years ago one of our most skilled salmon managers, Mr Kjell Moen, delivered such an activity plan for the river Tana. I am very sad to say that Mr Moen is no longer with us, but his plan is very much alive. It consists of four paragraphs and goes like this:

1. There shall be more salmon in the river.
2. More people shall benefit more from the salmon.
3. The authorities shall be less involved in the current management.
4. Everbody shall be happy.

Well, Mr President – what more do we need? In Norway the long period of decline in salmon abundance came to a halt in the last half of the 1990s, and some years of increasing abundance and catches have followed. Last year, the catches did not show further improvements, reminding us that for salmon there will be no quick return to former glory. Through international cooperation important steps have been taken to increase knowledge and improve upon management practices. NASCO is the driving force behind this development and has become increasingly important as a forum for international cooperation in salmon conservation and management in the broad sense. In fact, I cannot think of one single important issue in salmon management that has not been discussed or evaluated by this Organization. To this end, all Parties and Presidents have made important contributions, and the NGOs have participated with skill and ambition. In addition, I am sure we all can agree that one essential success factor has been the outstanding efforts of our Secretariat.

NASCO, of course, must continue to face all important issues in salmon conservation as they emerge. I feel, however, that implementation by the Parties now should be given increased attention. I can assure you that my delegation is well aware of the challenges facing us back home. We still need to develop the environmental performance of our aquaculture industry. We must strengthen our efforts to combat diseases and parasites, and we must improve our regulatory measures even further. During the last few years, protection of salmon stocks has received increased attention in Norway. As a result of this, one important step was taken by the Norwegian Parliament in February this year, when national salmon rivers and salmon fiords were designated. This arrangement is an important contribution to the safeguarding of approximately 75% of the Norwegian salmon resource. Additional information is given in document CNL(03)31.

Through NASCO's efforts to promote international cooperative research, important aspects of the oceanic life of salmon will be improved, and we will increase our knowledge of important factors relating to the marine mortality of Atlantic salmon. To enhance this research, Norway has decided to make a contribution of £10,000 to the International Atlantic Salmon Research Fund. We realise that this sum is quite modest compared to the needs. However, we hope that this contribution may help release funding from Parties that have not contributed yet, as well as from private sources.

Finally, Mr President, I would like to thank all involved for the excellent preparations and assure you that my delegation looks forward to a productive meeting.

Thank you.

Opening Statement made by the Russian Federation

It is my pleasure, on behalf of the Russian delegation, to greet all delegates at the Twentieth Annual Meeting of NASCO. A lot of important work lies ahead of us, and we are confident that decisions at this meeting will be for the benefit of our collective course, a principal objective of which is the conservation of the pearl of our rivers, Atlantic salmon, for future generations, decisions which would allow all countries with salmon interests to look into the future with optimism.

In Russia, the past year was significant for the situation with the status of Atlantic salmon stocks in two of the three regions where Atlantic salmon is found, which was noted to be improving for the first time over a long period of time. In 2002 the abundance of salmon in the majority of rivers on the Kola Peninsula was the highest on record in the past 30 years. The stock of salmon in the largest river in Russia, Pechora, has also shown an upward trend. Pleasant also is the fact that, for the first time in the history of development of the recreational fishery in Russia, the catch by anglers, both in catch-and-release and catch-and-retain, was nearly 1.3 times larger than the commercial catch, with commercial fisheries continuing to decline and recreational fishing continuing to increase.

However, there were also problems which we had to face, and the most significant was a growing number of farm escapees in the catch. Previously, they were recaptured only in rivers located in the western part of the Kola Peninsula; however, in the last two years they have tended to move farther east. Therefore, as we see it, our work together with the aquaculture industry in the Liaison Group should be further reinforced and it is vitally important to ensure good progress in implementing the Action Plans developed in accordance with the Guidelines on Containment adopted by the Group. The situation with the escapes of farmed salmon in the entire area of distribution of wild Atlantic salmon stocks causes concern. I presume that all delegates present here, managers, scientists and NGOs, share these concerns. However, it is important to not only recognize the problem, it is more important that the aquaculture industry take concrete measures, which would help lessen the impact of farm escapees on wild salmon. In our country we are taking steps to avoid mistakes made by other countries. And it's very helpful that NASCO summarized the experience gained by those countries.

We have all agreed that the Precautionary Approach should be applied to the entire range of salmon conservation and management activities. The Standing Committee on the Precautionary Approach has already developed, or is in the process of developing, a number of documents to give guidance in this process. We believe that improvement of the overall situation for salmon stocks in Russia is, to a certain extent, related to application of this approach. Also important is, in our view, increased cooperation with all those parties whose activities can have detrimental effects on the salmon and its habitat.

We are all concerned about the survival of salmon in the sea. To address this problem the International Atlantic Salmon Research Board has been established, priorities identified and approaches developed to fill in the gaps in our knowledge and counteract the mortality of salmon in the sea.

On the whole, considering the work of NASCO in the past year, one cannot but admit undeniable progress in resolving many important issues. This also applies to the overall work done by NASCO since it has been established. The Russian delegation is confident that its future work will be as fruitful as it has been until now.

In conclusion, I wish to thank our hosts for a hearty welcome. We are delighted to once again visit this country, where proud and good-hearted people have maintained beautiful age-old traditions and expertise to produce the best whisky in the world. Scotland is a country of mountains, clean lakes, heather and ancient castles, and Edinburgh is rightly regarded as one of the most beautiful and picturesque cities of the United Kingdom. I would like to wish everyone present here very successful work in this wonderful city in resolving the challenges before us this week.

Thank you.

Opening Statement made by the United States of America

Mr. President, Distinguished Delegates, Observers, Ladies and Gentlemen:

It is my pleasure to participate for the first time as US Commissioner at this Twentieth Annual Meeting of NASCO. I would like to extend the compliments of the United States to the President and Secretariat for making all of the excellent arrangements for what I anticipate will be a very productive meeting.

NASCO should be commended for the manner in which it has embraced the Precautionary Approach. As we discussed at the 2003 inter-sessional meeting of the Standing Committee on the Precautionary Approach in Williamsburg, the ultimate measure of our success in respect to the Precautionary Approach is the degree to which we implement our commitments and the response of Atlantic salmon stocks to our efforts.

We are supportive of the work accomplished by the SCPA and are optimistic that the Council will adopt the so-called "Williamsburg Resolution" this week. In doing so, we will have updated and coordinated NASCO's efforts to minimize potential adverse effects to wild stocks from introductions and transfers, aquaculture and transgenics. Adoption of the Williamsburg Resolution at this meeting would reaffirm the commitment of NASCO and its Contracting Parties to the protection of the wild stocks.

This year, the management advice through the ACFM indicates that the PFA forecast is among the lowest on record and only provides a 10% chance that the abundance will be sufficient to meet the spawner requirements for North America. It is also important to note that, at NASCO's request, ICES has for the first time provided long-term stock rebuilding projections. This allows NASCO to make decisions on mixed stock fisheries with a greater understanding of implications for the various stock components. This is an excellent example of NASCO and ICES working together to implement a Precautionary Approach.

NASCO has committed to developing and implementing management measures aimed at maintaining all stocks above their conservation limits in order to maintain both the productive capacity and diversity of salmon stocks. Despite this commitment, in 2002 the overall conservation limit for 2SW salmon in the North American Commission area was only met in Newfoundland. Within the US in 2002, 2SW returns were the second lowest in the 32-year time series and represent less than 3% of the conservation limit. No salmon returned to three of the eight rivers with populations listed as endangered. ICES states that there is a zero chance that returns to the US will meet or exceed the conservation limit. Further, ICES also notes that the North American stock complex of non-maturing salmon has declined to record levels and is in a tenuous condition. The scientific advice for the West Greenland Commission is clear.

As stock status has declined, NASCO has turned its attention to a wide range of factors that could be impacting stock status. NASCO has reached out to other international organizations focused on salmon management to collaborate on common factors affecting stock abundance. In all of these efforts, the ultimate success of NASCO depends on our ability to work successfully with industry representatives, private citizens, scientific institutions and conservation organizations. All stakeholders can, and must be able to, play a constructive role in the work of NASCO if the measures adopted by the Organization are to be viewed as legitimate.

As we celebrate NASCO's Twentieth Annual Meeting here in the city of its headquarters, we are presented with an excellent opportunity to reflect upon the work of NASCO. Although NASCO's initial primary focus was on managing fisheries, the purpose of the Organization is a broad one. As defined in the Convention, the purpose of NASCO is to promote the acquisition, analysis and dissemination of scientific information pertaining to salmon stocks in the North Atlantic Ocean for the purpose of promoting the conservation, restoration, enhancement and rational management of these stocks through international cooperation. Given the status of Atlantic salmon stocks worldwide, our challenge is to determine the most appropriate and effective role for NASCO in the future of Atlantic salmon stocks.

ANNEX 5

Opening Statement made by the Government of Ukraine

Mr President, Distinguished Delegates, Ladies and Gentlemen:

On behalf of the Government of Ukraine I would like to express our sincere gratitude to the Council of NASCO and its Secretariat for their kind invitation to Ukraine to become an observer to NASCO and to attend the Twentieth Annual Meeting in such a capacity.

It is a pity that due to unforeseen circumstances our official delegation and experts could not come to Edinburgh to participate in this session. So, as a Consul General of Ukraine in this country, I am authorised to represent Ukraine at this meeting and, as such, I will try to do my best to deliver to you the main ideas and to report back the most important results of this Session to my Government and relevant Agencies.

On the request of the latter I wish to underline and to assure you that the tasks of protection and preservation of the natural fish species and their stocks in our territorial waters, mostly belonging to the Black Sea-Mediterranean Sea basin, are of utmost and constant importance to the Government of Ukraine and its people.

In line with this, in recent years a new subject, "Marine ecology and protection of the environment", has been introduced in the educational programmes of the relevant institutions of higher and special education. Relevant legislation is also being developed at the same time reflecting greater attention to these problems and universal standards in the area in comparison with previous decades.

Returning to the main theme of this Organization, I wish to inform you about our specific interest in your work. The Danube salmon *(Hucho hucho hucho)* inhabits the upper reaches of the rivers Tysa and Prut in Ukraine. There it spawns in the mountain streams but it is very rare. This salmon species is endemic. It has been entered in the European Red List (1991) and the Red Book of Ukraine (1992).

There have been unconfirmed reports that the species could be present in the lower reaches of the river Danube but it might also have been confused with the Black Sea salmon. There are no reliable records of its presence in the Danube for the last two decades. The other form, the Black Sea salmon *(Salmo trutta labrax),* is distributed throughout the whole Black Sea basin and is more common than the Danube salmon. They spawn in the mountain rivers mainly in the eastern part of the Black Sea basin (according to earlier information (1964), possibly in some rivers of Crimea, Ukraine).

During the period of growth mainly immature species are found in the coastal waters of the Ukraine. Each year occasional specimens (weighing from 200-300 g to 2-3 kg) are caught by fishing-nets both in the sea and in the estuaries. Catches of Black Sea salmon by angling are also known but the official statistics do not include them. According to estimates made by the experts hundreds of such specimens are caught each year, mostly in the summer time. The catches of salmon go directly for internal consumption and very rarely become known or officially recorded. The resources for studying and enhancing the Black Sea salmon species in Ukraine are limited. In particular, it is very difficult to obtain official permission to fish for some species even for research. But at the same time we have to admit that the present measures for its preservation are not ultimately very effective.

And that is why we in Ukraine are very interested in receiving practical international assistance and recommendations from NASCO for our efforts to preserve the above-mentioned salmon species in Ukrainian territorial waters. And for this reason we are glad to participate in the present meeting of the Organization.

Thank you for your kind attention, and I look forward to future cooperation.

ANNEX 6

Opening Statement made by the International Baltic Sea Fishery Commission

Mr President, Mr Secretary, Distinguished Delegates, Ladies and Gentlemen:

It is a privilege and also a pleasure to attend your meetings in an observer capacity. The exchange of information and experience is becoming more and more important because we are faced with the same problems and we have the same goal, namely the protection of the wild salmon. The Joint Meeting on the marine mortality of salmon in 2002 in Vancouver, co-sponsored by NASCO, NPAFC, IBSFC, ICES and PICES, was a very successful initiative. NASCO and IBSFC have been actively participating in the meetings of the Regional Fishery Bodies organised by FAO and the meeting of the Secretariats of the Fishery Commissions of the North Atlantic and the adjacent seas.

As usual, I want to inform you now of the latest developments in IBSFC on salmon.

The IBSFC Salmon Action Plan 1997-2010 has already, after a few years, shown positive signs for the wild Baltic salmon.

Under the protection measures such as: reduced TACs, prolonged closed seasons, and habitat reconstruction; and along with the help of nature, in particular good broodstocks, a lower mortality under the M74 syndrome, and markedly improved status of the stocks, most stocks are improving, but still not all.

In recent years an effort has been made to shift the fishery from the mixed wild and reared population firstly to a fishery targetting mainly reared populations. In 2001 the Commissions agreed upon a definition of terminal fishery areas (where mainly reared salmon can be taken) and adopted in 2002 a "Resolution on a harvesting strategy for Baltic salmon in terminal fishery areas". There is no doubt that there is a surplus of reared salmon in the Baltic Sea but there are also different views as to the quantity of the surplus. Two EU Member States have already established terminal fishery areas (3 in Sweden and 3 in Finland) and informed IBSFC on the geographical coordinates. They are all located in the northern-most part of the Baltic Sea in the Gulf of Bothnia.

Mr President, IBSFC is looking forward to cooperating with NASCO in the interest of the wild salmon. Thank you for your attention.

ANNEX 7

Joint Opening Statement made by Non-Government Organizations

Mister President, Distinguished Delegates and Friends – before dealing with the detail of our statement, the NGOs wish to welcome the proposed "Williamsburg Resolution". This move to strengthen and harmonise a number of individual agreements offers a renewed opportunity to make progress in all aspects of the conservation of wild Atlantic salmon.

Coming to our statement, we wish to raise two main subjects:

1. Aquaculture

In the context of the Oslo Resolution, and the Williamsburg proposals, the NGOs wish to draw special attention to the need for the application of the Precautionary Approach to all aspects of salmon farming, and in particular to the potential effect of escapes of farmed salmon from sea cages. The problem is exemplified by the reported Norwegian figure of 630,000 escapes last year. As noted in the report of the Standing Committee on the Precautionary Approach (CNL(03)17), recent research carried out in Ireland has indicated that interbreeding between farmed and native wild fish can cause rapid and severe reductions in the fitness of the resultant progeny. This emphasises the dangers resulting from persistent escapes, even in comparatively small numbers, from sea cages. While we welcome the Guidelines on Containment developed by the Liaison Group, the NGOs seek additional measures to reinforce the Guidelines and encourage the Parties to minimise the occurrence and impact of escapes by adoption of the following measures:

(i) Full and detailed reporting of all escapes
(ii) Introduction of marking or tagging schemes for all farmed salmon (as proposed by the ICES ACFM, but as a policy rather than just as a trial)
(iii) Introduction of penalties (fines or ultimately withdrawal of licences) for persistent offenders. Resolutions need teeth, and preferably sharp ones!
(iv) Consideration of the use of sterile (triploid) fish to minimise the impact of escapes on wild fish

The NGOs continue to press for effective regulation of aquaculture, through the mandatory adoption, by all operators, of Codes of Best Environmental Practice to cover this and all other aspects of fresh water and sea cage farming.

Significant progress has been made in the development and implementation of collaborative joint approaches, involving government, wild fishery and conservation interests, and the aquaculture industry, with the purpose of achieving mutually acceptable progress towards the sustainable management of salmon farming. The NGOs therefore emphasise the potential for further co-operation at an international level, and remain extremely disappointed that they have as yet no representation in the NASCO Aquaculture Liaison Group. In our view, this continued exclusion is not compatible with the avowed expressions of the purposes of the Liaison Group and of the commitment of its members, especially in view of the achievement and opportunities for co-operation between farmed and wild fish interests identified in the "SalCo-op" report (Annex 6 to CNL(03)23 and SLG(03)4).

The stated aim of the industry is to make genuine progress towards reducing the impact of aquaculture on wild salmon. The recent decision by aquaculture representatives in Williamsburg – to reject the proposal from NGOs to provide selected representatives to participate constructively in the work of the Liaison Group – does not accord with a wholehearted pursuit of that aim. The solution is in the hands of the industry. NGOs have valuable experience to contribute and are committed to co-operation in developing solutions – but we cannot work to full effectiveness from the outside, and we look to the Parties for robust support in achieving our involvement.

2. Mixed stock fisheries

The NGOs welcome the agreement that has been reached for the permanent reduction, with fair compensation, of the major part of the drift net fishery off the North East coast of England. Funding is being provided by a public/private partnership with a contribution of £1.25m from the UK government and more than £2m from the private sector, co-ordinated by NASF(UK). We wish to express our profound hope that this latest example of progress will be followed by the achievement of equitable permanent agreements for the effective reduction and eventual closure of the remaining drift net salmon fisheries in the North Atlantic.

We trust that the long-term agreement at West Greenland and continued restraint by the Faroese will lead to permanent settlements. But already the Irish commercial salmon catch of significantly more than 200,000 salmon per year (when allowance is made for seal predation in the nets and unreported catches) remains the largest mixed stock fishery in the North Atlantic. It not only prevents thousands of fish from returning to their native Irish rivers, but also greatly affects rivers in England, Wales and Scotland, not to mention undermining dedicated and expensive stock restoration efforts in Spain, France and Germany. We urge the Irish Government in the first instance to implement as a matter of urgency the 40% quota reductions recommended by their scientific advisers, and secondly to facilitate further permanent reductions in exploitation by encouraging private/public partnerships to buy out netsmen with fair compensation. This will benefit not only rivers across Europe, but also the Irish economy, as demonstrated by the recent INDECON study (sponsored by the Central Fisheries Board). We hope that the Irish Government will respond quickly and positively.

In the interests of saving the time of the Council, I will only mention briefly a number of other issues which concern the NGOs, some of which will be dealt with more fully in written statements. They are:

3. Transgenic salmon

The NGOs remain most concerned at the potential for damage to wild populations from interbreeding with escaped fish that have been genetically modified. We reiterate our view that there should be no risk whatever of the introduction of any genetically modified salmon into the environment, and that accordingly their introduction into pens, cages or enclosures in fresh or salt water should not be permitted.

4. Control of the movement of salmonids

The NGOs welcome the proposed inclusion in the "Williamsburg Resolution" of expanded and harmonised measures to minimise the impact of the introduction or movement of salmonids into and between areas, taking especial note of the preliminary draft guidance on stocking, and urge the early refinement, completion and agreement of this text.

5. ***Gyrodactylus salaris***

The NGOs wish to draw attention to the continuing damage inflicted by this parasite, and to the need for effective action to control and eradicate it. A detailed statement will be made at the opening session of the North-East Atlantic Commission.

6. **Predation**

The Salmon Net Fishing Association of Scotland emphasises its serious concern at the growth of seal populations. This will be amplified in a separate written statement, and is supported by the NGO Group, which urges renewed attention to be paid to the effects on wild salmon stocks of all forms of freshwater and marine predation, with particular reference to the contents of the paper on predator-related mortality (CNL(03)24). Predation is a real problem, and is probably one of the few associated with the marine environment that can be tackled with a reasonable possibility of a successful outcome. We would request NASCO to encourage home governments to support investigations likely to lead to a significant reduction in the level of predation-related mortality, and in seal predation in particular.

7. **International support for co-operative research**

The NGOs appreciate their newly approved representation on the NASCO International Atlantic Salmon Research Board. They call on national governments to make the substantial contributions that are needed for the funding of a co-ordinated and effective research programme, with special attention to the problem of the increase in salmon mortality at sea. We look forward to playing a full part in this process.

That concludes the joint statement on behalf of the NGOs. We look forward hopefully to a productive meeting, and thank you for your attention.

ANNEX 8

List of Participants

* Denotes Head of Delegation

CANADA

*Mr Guy Beaupré	Representative Department of Fisheries and Oceans, Ottawa, Ontario
Chief George Ginnish	Representative Eel Ground First Nation, New Brunswick
Mr Pierre Tremblay	Representative Sainte-Foy, Quebec
Mr Jacque Robichaud	President of NASCO Ottawa, Ontario
Mrs Julia Barrow	Department of Fisheries and Oceans, Ottawa, Ontario
Mrs Monique Begin	Societé de la faune et des parcs du Quebec, Quebec
Mr Peter Cronin	New Brunswick Department of Natural Resources and Energy, Fredericton, New Brunswick
Mr Jim Gillespie	Quispamsis, New Brunswick
Ms Nell Halse	New Brunswick Salmon Growers' Association, Letang, New Brunswick
Mr Murray Hill	Department of Fisheries, Pictou, Nova Scotia
Mr Sandi McGeachy	Department of Agriculture, Fisheries and Aquaculture, Fredericton, New Brunswick
Mr Brian Meaney	Department of Fisheries and Aquaculture, St John's, Newfoundland
Mr David Meerburg	Department of Fisheries and Oceans, Ottawa, Ontario
Mr John Moores	Department of Fisheries and Oceans, Ottawa, Ontario
Mr Rex Porter	Department of Fisheries and Oceans, St John's, Newfoundland
Ms Sue Scott	Atlantic Salmon Federation, New Brunswick

Mr Berkley Slade	Department of Fisheries and Oceans, St John's, Newfoundland
Mr William Taylor	Atlantic Salmon Federation, St Andrews, New Brunswick
Mr Serge Tremblay	Societé de la faune et des parcs du Quebec, Quebec
Mr Tim Young	Department of Fisheries and Oceans, Ottawa, Ontario

<u>DENMARK (IN RESPECT OF THE FAROE ISLANDS AND GREENLAND)</u>

*Mr Emanuel Rosing	<u>Representative</u> Greenland Home Rule, Nuuk, Greenland
Mr Árni Olafsson	<u>Representative</u> Ministry of Foreign Affairs, Copenhagen, Denmark
Mr Hedin Weihe	<u>Representative</u> Ministry of Fisheries and Maritime Affairs, Torshavn, Faroe Islands
Mr Toennes Berthelsen	Organization of Fishermen and Hunters in Greenland, Nuuk, Greenland
Dr Jan Arge Jacobsen	Fisheries Laboratory of the Faroes, Torshavn, Faroe Islands
Mr Per Kanneworff	Greenland Institute of Natural Resources, Nuuk, Greenland
Mr Lars Dyrlov Madsen	Greenland Home Rule, Nuuk, Greenland
Mr John Rajani	Mission of the Faroe Islands to the United Kingdom, London, UK

<u>EUROPEAN UNION</u>

*Mr Ole Tougaard	<u>Representative</u> European Commission, Brussels, Belgium
Mr Andrew Thomson	<u>Representative</u> European Commission, Brussels, Belgium
Ms Carmen Beraldi	Secretaria General de Pesca, Madrid, Spain
Dr Malcolm Beveridge	Fisheries Research Services, Pitlochry, UK
Ms Elizabeth Black	Environment Agency, Penrith, UK

Dr Paul Brady	SEERAD, Edinburgh, UK
Ms Hazel Campbell	Department of Culture, Arts and Leisure, Belfast, UK
Mr Richard Cowan	DEFRA, London, UK
Mr David Dunkley	SEERAD, Edinburgh, UK
Mr Lal Faherty	Western Regional Fisheries Board, Galway, Ireland
Mr Peter Funegard	National Board of Fisheries, Gothenburg, Sweden
Dr Paddy Gargan	Central Fisheries Board, Dublin, Ireland
Mr Jose Luis Gonzalez Serrano	Secretaria General de Pesca Maritima, Madrid, Spain
Dr Lars Karlsson	National Board of Fisheries, Alvkarleby, Sweden
Ms Eija Kirjavainen	Ministry of Agriculture and Forestry, Department of Fisheries and Game, Helsinki, Finland
Mr Julian Maclean	Fisheries Research Services, Montrose, UK
Dr Guy Mawle	Environment Agency, Bristol, UK
Mr Pentti Munne	Ministry of Agriculture and Forestry, Department of Fisheries and Game, Helsinki, Finland
Mr John O'Connor	Central Fisheries Board, Dublin, Ireland
Mr George O'Doherty	Department of Communications, Marine and Natural Resources, Dublin, Ireland
Dr Niall Ó Maoileidigh	Marine Institute, Dublin, Ireland
Mr Ted Potter	Centre for Environment, Fisheries and Aquaculture Science, Lowestoft, UK
Mr Frank Sheridan	Department of Communications, Marine and Natural Resources, Dublin, Ireland
Dr Eric Verspoor	Fisheries Research Services, Aberdeen, UK
Mr Andrew Wallace	Association of Salmon Fishery Boards, Edinburgh, UK
Dr Ken Whelan	Marine Institute, Newport, Ireland

ICELAND

*Mr Guðmundur B Helgason	Representative Ministry of Agriculture, Reykjavik
Mr Arni Isaksson	Representative Directorate of Freshwater Fisheries, Reykjavik

NORWAY

*Mr Steinar Hermansen	Representative The Royal Ministry of Environment, Oslo
Mr Arne Eggereide	Representative Directorate for Nature Management, Trondheim
Mr Raoul Bierach	Representative Directorate for Nature Management, Trondheim
Ms Maren Esmark	World Wildlife Fund (Norway), Oslo
Dr Lars Petter Hansen	Norwegian Institute for Nature Research, Oslo

RUSSIAN FEDERATION

*Dr Boris Prischepa	Representative Murmanrybvod, Murmansk
Dr Svetlana Krylova	Murmanrybvod, Murmansk
Ms Elena Samoylova	PINRO, Murmansk
Dr Alexander Zubchenko	PINRO, Murmansk

USA

*Ms Patricia Kurkul	Representative NOAA Fisheries, Gloucester, Massachusetts
Mr Stephen Gephard	Representative Department of Environmental Protection, Inland Fisheries Division, Old Lyme, Connecticut
Mr George Lapointe	Representative Maine Department of Marine Resources, Augusta, Maine
Mr Edward Baum	Atlantic Salmon Unlimited, Hermon, Maine

Ms Kimberly Blankenbeker	National Marine Fisheries Service, Silver Spring, Maryland
Ms Nikki Brajevich	US Department of State, Office of Marine Conservation, Washington, DC
Mr Scott Burns	World Wildlife Fund (USA), Washington, DC
Mr Stephen Chase	Atlantic Salmon Federation, St Andrews, New Brunswick
Ms Mary Colligan	National Marine Fisheries Service, Gloucester, Massachusetts
Mr Tom Grasso	World Wildlife Fund (USA), Washington, DC
Mr Christopher Legault	National Marine Fisheries Service, Woods Hole, Massachusetts
Mr Joseph McGonigle	AquaBounty Farms, Waltham, Massachusetts
Mr Andrew Minkiewicz	US Senate, Oceans, Fisheries and Coast Guard Subcommittee, Washington, DC
Mr Pasquale Scida	National Marine Fisheries Service, Gloucester, Massachusetts
Mr Timothy Sheehan	National Marine Fisheries Service, Woods Hole, Massachusetts
Ms Boyce Thorne-Miller	SeaWeb, Washington DC
Ms Joan Trial	Maine Atlantic Salmon Commission, Bangor, Maine
Mr John Ward	National Marine Fisheries Service, Silver Spring, Maryland

STATES NOT PARTIES TO THE CONVENTION

Mr Oleksandr Tsvietkov	Consulate of the Ukraine, Edinburgh, UK

INTER-GOVERNMENT ORGANIZATIONS

Dr Walter Crozier	Chairman, ICES Working Group on North Atlantic Salmon, Bushmills, Northern Ireland
Mr David de G Griffith	International Council for the Exploration of the Sea, Copenhagen, Denmark
Dr Walter Ranke	International Baltic Sea Fishery Commission, Warsaw, Poland

<u>NON-GOVERNMENT ORGANIZATIONS</u> **

Mr Brian Davidson	Association of Salmon Fishery Boards, UK
Captain Jeremy Read Dr Derek Mills Dr Richard Shelton	Atlantic Salmon Trust, UK
Mr Chris Poupard	European Anglers Alliance
Mr Richard Behal Mr Noel Carr	Federation of Irish Salmon and Sea-Trout Anglers, Ireland
Mr Yves Giroux	Féderation Québecoise pour le saumon Atlantique, Canada
Mr Patrick Martin	Fondation Saumon, France
Mr John Gregory	Institute of Fisheries Management, UK
Mr Patrick Byrne	National Anglers Representative Association, Ireland
Mr Bjornulf Kristiansen	Norges Bondelag (Norwegian Farmers Union), Norway
Mr Aage Wold	Norskelakseelver (Norwegian Salmon Rivers), Norway
Mr Oyvind Fjeldseth	Norwegian Association of Hunters and Anglers, Norway
Mr William Shearer Mr Robert Ritchie	Salmon Net Fishing Association of Scotland, UK
Mr Paul Knight Mr Patrick Fothringham Mr David Henderson	Salmon and Trout Association, UK
Mr Ian Calcott Prof David Mackay	Scottish Anglers National Association, UK
Mr Newell McCreight	Ulster Angling Federation, UK

** *Up to two representatives from Non-Government Organizations are allowed to attend the meetings of the Council and Commissions at any time.*

<u>SALMON LIAISON GROUP REPRESENTATIVE</u>

Mr James Ryan	Chairman, Salmon Liaison Group

SECRETARIAT

Dr Malcolm Windsor	Secretary
Dr Peter Hutchinson	Assistant Secretary
Miss Margaret Nicolson	PA to the Secretary
Mrs Sophie Ross	PA

Support Staff

Ms Shauna Cranney	SEERAD, Edinburgh, UK

ANNEX 9

CNL(03)48

Twentieth Annual Meeting of the Council
Balmoral Hotel, Edinburgh, Scotland, UK
2-6 June, 2003

Agenda

1. **Opening Session**

2. **Adoption of Agenda**

3. **Administrative Issues**

   3.1 Secretary's Report

   3.2 Report of the Finance and Administration Committee

   3.3 Reports on the Activities of the Organization

   3.4 Announcement of the Tag Return Incentive Scheme Grand Prize

4. **Scientific, Technical, Legal and Other Information**

   4.1 Scientific Advice from ICES

   4.2 Reports on the SALMODEL and SALGEN Projects

   4.3 Catch Statistics and their Analysis

   4.4 Report of the Standing Scientific Committee

5. **Conservation, Restoration, Enhancement and Rational Management of Salmon Stocks**

   5.1 Measures Taken in Accordance with Articles 14 and 15 of the Convention

   5.2 The Precautionary Approach to Salmon Management

      (a) Reports on Progress with Application of the Decision Structure for Management of North Atlantic Salmon Fisheries
      (b) Reports on Progress with Development and Implementation of Habitat Protection and Restoration Plans
      (c) Report of the Standing Committee on the Precautionary Approach on Application of the Precautionary Approach to Introductions and Transfers, Aquaculture and Transgenics

(d) Report of the Technical Workshop on Development of a Framework for Assessing Social and Economic Values Related to Wild Atlantic Salmon
(e) Future Actions in relation to Application of the Precautionary Approach

5.3 Unreported Catches

5.4 Report of the International Cooperative Salmon Research Board

5.5 Scientific Research Fishing in the Convention Area

5.6 By-catch of Atlantic Salmon

5.7 Impacts of Aquaculture on Wild Salmon Stocks

(a) Returns made in Accordance with the Oslo Resolution
(b) Liaison with the Salmon Farming Industry

5.8 Transgenic Salmon

5.9 Predator-related Mortality

5.10 St Pierre and Miquelon Salmon Fisheries

5.11 Report on Initiatives within FAO of Relevance to NASCO

5.12 Reports on Conservation Measures Taken by the Three Regional Commissions

6. Other Business

7. Date and Place of Next Meeting

8. Report of the Meeting

9. Press Release

ANNEX 10

Council

CNL(03)8

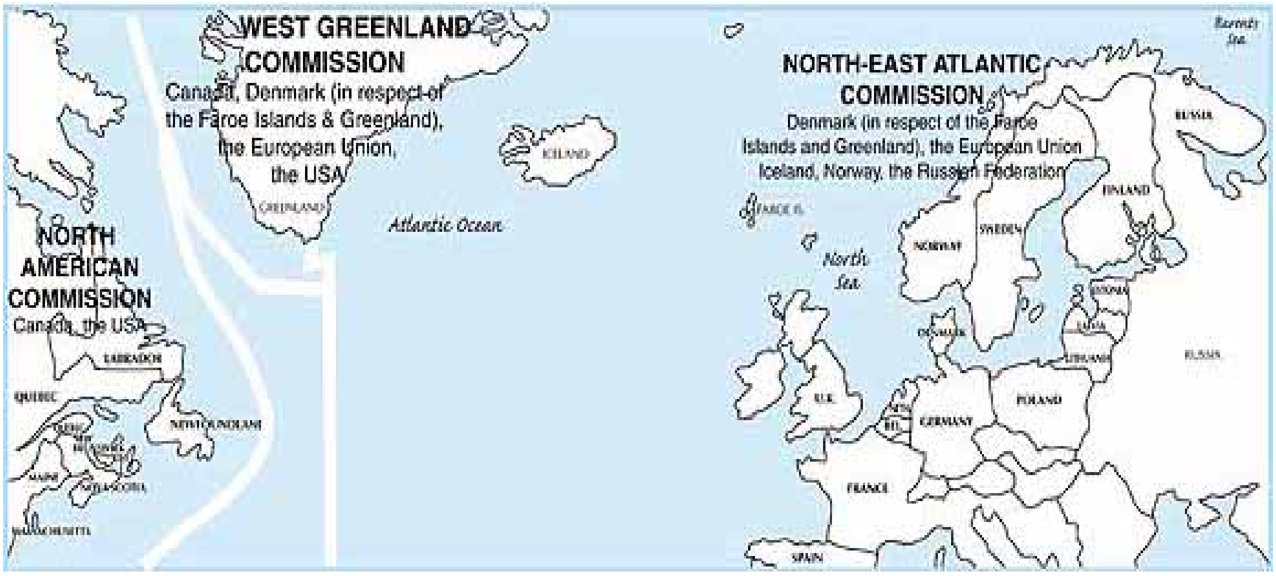
Report of the ICES Advisory Committee on Fishery Management

Only the advice concerning general issues of relevance to the North Atlantic is given in this report. The detailed advice on a Commission area basis is annexed to the report of the Commissions.

3 MANAGEMENT FRAMEWORK FOR SALMON IN THE NORTH ATLANTIC

The advice generated by ICES is in response to terms of reference posed by the North Atlantic Salmon Conservation Organisation (NASCO), pursuant to its role in international management of salmon. NASCO was set up in 1984 by international convention (the Convention for the Conservation of Salmon in the North Atlantic Ocean), with a responsibility for the conservation, restoration, enhancement and rational management of wild salmon in the North Atlantic. While sovereign states retain their role in the regulation of salmon fisheries for salmon originating from their own rivers, distant water salmon fisheries, such as those at Greenland and Faroes, which take salmon originating from rivers of another Party are regulated by NASCO under the terms of the Convention. NASCO now has seven Parties that are signatories to the Convention, including the EU which represents its Member States.

NASCO discharges these responsibilities via three Commission areas shown below:



3.1 Management objectives

NASCO (NASCO CNL31.210) has identified the primary management objective of that organisation as:

"To contribute through consultation and co-operation to the conservation, restoration, enhancement and rational management of salmon stocks taking into account the best scientific advice available".

NASCO further stated that "the Agreement on the Adoption of a Precautionary Approach states that an objective for the management of salmon fisheries is to provide the diversity and abundance of salmon stocks" and NASCOs Standing Committee on the Precautionary Approach interpreted this as being "to maintain both the productive capacity and diversity of salmon stocks"

NASCO's Action Plan for Application of the Precautionary Approach (NASCO 1999) provides interpretation of how this is to be achieved, as follows:

"Management measures should be aimed at maintaining all stocks above their conservation limits…………by the use of management targets"

Socio-economic factors could be taken into account in applying the Precautionary Approach to fisheries management issues":

"The precautionary approach is an integrated approach that requires, inter alia, that stock rebuilding programmes (including as appropriate, habitat improvements, stock enhancement, and fishery management actions) be developed for stocks that are below conservation limits".

Conservation limits (CLs) have been defined by ICES as the level of stock that will achieve long term average maximum sustainable yield (MSY), as derived from the adult to adult stock and recruitment relationship.

NASCO has adopted this definition of CLs (NASCO, 1998). The CL is a limit reference point (S_{lim}). However, management targets have not yet been defined for N Atlantic salmon stocks. ICES has interpreted stocks to be within safe biological limits only if the lower bound of the confidence interval of the most recent spawner estimate is above the CL.

4 ATLANTIC SALMON IN THE NORTH ATLANTIC AREA

4.1 Catches of North Atlantic Salmon

4.1.1 Nominal catches of salmon

Nominal catches of salmon reported for each salmon-producing country in the North Atlantic are given in Table 4.1.1.1 for the years 1960 to 2002. These catches (in tonnes) are illustrated in Figure 4.1.1.1 for four North Atlantic regions. Catch statistics in the North Atlantic also include fish farm escapees and, in some north-east Atlantic countries, also ranched fish. Reported Catches for the three NASCO Commission Areas for 1994-2002 are provided below:

Area	1994	1995	1996	1997	1998	1999	2000	2001	2002
NEAC	3581	3277	2753	2074	2220	2073	2728	2876	2464
NAC	358	261	294	231	159	154	155	150	152
WGC		85	92	59	11	19	21	43	9
Total	3945	3628	3138	2364	2397	2246	2913	3069	2625

The catch data for 2002 are provisional, but the total nominal catch of 2,625 t is amongst the lowest on record. However, catches in a number of countries were above the recent 5 and 10 year averages.

The nominal catch (in tonnes) of wild fish in 2002 was partitioned according to whether the catch was taken in coastal, estuarine or riverine fisheries. These are shown below for the NEAC and NAC Commission Areas. It was not possible to apportion the small Danish catch in 2002 and this has been excluded from the calculation. The percentages accounted for by each fishery varied considerably between countries. In total, however, coastal fisheries accounted for 57% of catches in North East Atlantic countries compared to 10% in North America, whereas in-river fisheries took 37% of catches in North East Atlantic countries compared to 76% in North America. The percentage of the catch taken in coastal fisheries in the southern part of the NEAC area has increased over recent years, despite reductions in catches and fishing effort. This is believed to reflect the large increase in catch-and-release in rod fisheries.

Area	Coast		Estuary		River		Total
	Weight	%	Weight	%	Weight	%	Weight
NEAC	1378	57	158	6	901	37	2437
NAC	16	10	21	14	115	76	152

4.1.2 Catch and release

Catch and release data have been provided since the early 1990s by 6 countries. In 2002, the percentage of the total rod catch that was released ranged from 16% in Iceland to 80% in Russia. Catch and release rates generally indicate an increasing trend over the last decade and the values reported in 2002 are among the highest in each time series.

4.1.3 Unreported catches of salmon

The estimated unreported catch within the NASCO Commission Areas in 2002 was 1,033 t (Table 4.1.1.1), or 28 % of the total catch (reported and unreported). Unreported catch has comprised a reasonably consistent percentage of the total catch since 1987. The introduction of carcase tagging programmes in Ireland and UK (N. Ireland) in the last two years is expected to lead to reductions in unreported catches in these countries. After 1994 there are no available data on the extent of possible salmon catches in international waters. Limited surveillance flights, which were the basis of past estimates of catches in international waters, have not reported any such salmon fishing in recent years. Estimates (in tonnes) of unreported catches for the three Commission Areas for the period 1994-2002 are given below:

Area	1994	1995	1996	1997	1998	1999	2000	2001	2002
NEAC	1157	942	947	732	1108	887	1135	1089	940
NAC	107	98	156	90	91	133	124	81	83
WGC	<12	20	20	5	11	12	10	10	10
Interntl. waters	25-100	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Expressed as a percentage of the total North Atlantic catch, national unreported catch estimates range from 0% to 15%. However, it should be noted that methods of estimating unreported catch vary both within and among countries. The non-reporting rates range from 2% to 64% of the total national catch in individual countries. An allowance for unreported catch is included in the assessments and catch advice for each Commission area.

4.1.4 Production of farmed and ranched salmon

The production of farmed Atlantic salmon in the North Atlantic area was 705,307 t in 2002, a small increase over 2001 (697,679 t), but 15% above the average of the past five years (610,716 t). Most of the production in the North Atlantic took place in Norway (62%) and Scotland (23%). Production increased over previous years in most countries; in relation to the average of the past five years reported increases ranged from 9% in Norway to 43% in the Faroes. However, production fell by around a half in both Iceland and the USA.

The world-wide production of farmed Atlantic salmon in 2002 topped one million tonnes for the first time. Total production was estimated at 1,058,307 t, an increase of 30% compared with 2001 (Figure 4.1.4.1). Production outside the North Atlantic area increased by 74% on 2001 to 353,000t; Chile was the biggest producer, accounting for 273,000 t. Overall, world-wide production of farmed Atlantic salmon in 2002 exceeded the reported nominal catch of Atlantic salmon in the North Atlantic by over 400 times. As a result, farmed salmon dominate world markets.

Catches of ranched salmon have declined substantially from a high of over 500 t in 1993 to around 10 t in 2002 (Figure 4.1.4.2). This is due to the cessation of salmon ranching in Iceland from 1999.

4.2 Update on the estimation of natural mortality at sea of Atlantic salmon

4.2.1 Methods and estimates of natural mortality (M) at sea

In 2002 the ICES endorsed the inverse-weight method as the basis of estimating M and determined that the most appropriate growth function for use with inverse-weight method was linear rather than the previously used exponential function. This change in growth function, plus analysis of data from additional rivers, resulted in the instantaneous monthly mortality rate used in the run-reconstrunction model for the North American and NEAC areas to be changed from 0.01 to 0.03. Details of the methods used and choice of preferred method are given in ICES CM 2002/ACFM:14.

ICES reviewed an analysis of a more extensive data set from 5 rivers on the NEAC area and 6 rivers in the NAC area. The rivers with suitable data extended from the Scorff (France) to the North Esk (Scotland) and north to the Vesturdalsa River (Iceland). On the North American side, hatchery and wild stock data sets extended from the Scotia-Fundy region to the north shore of the St. Lawrence (Quebec). The time period analysed was from 1981 to 1999 in the NEAC area and 1970 to 1999 in the NAC area.

The analysis of the river-specific growth data supported the previous conclusion that a linear function characterized the observed weights at age in the marine phase better than the exponential function. The estimates of integrated monthly mortality in the second year at sea ranged from 1.4% to 4%, increasing from south (Scorff in France) to north (Vesturdalsa in Iceland). The mortality rate on the hatchery stock (Shannon River) was higher than on the wild stocks of the southern NEAC area.

For North America, the monthly mortality rates in the second year at sea ranged from 1.5% (de la Trinite River) to a high of just under 8% for the wild stocks but ranging to just under 10% for the hatchery stock of the LaHave River (Figure 4.2.1.1). The hatchery stock mortality rates were higher than the wild stock mortality rates.

ICES acknowledged that the additional analyses confirmed the previous conclusion that monthly mortality in the second year at sea was greater than 1% and distributed around 3%, at least for the wild fish. There are important differences among stocks and even regions which are not accounted for in the generalization over the entire NEAC and NAC areas.

4.3 Significant developments towards the management of salmon

4.3.1 Trends in sub-catchment populations of salmon in the River North Esk, UK (Scotland)

Ideally, management units should correspond to the way in which the salmon resource is structured. Our current understanding of the population structure of salmon returning to rivers in UK (Scotland) has been informed by a number of scientific investigations. Long term tagging studies associated with fish traps on upper catchment tributaries suggest that homing units, or populations, are spatially distributed over distances as small as ca. 10km and that, within each sea age class, early running salmon tend to spawn in the upper areas of catchments while later running salmon, spawn in the lower reaches. This pattern is consistent among a range of river types (eg. Large/small, complex/simple). Thus, run-timing is related to spawning destination, and furthermore, run timing has been shown to be a heritable attribute (Stewart *et al*, 2000).

On the North Esk, on the east coast of Scotland, a fish counter allows a direct count of adult fish past a particular point on the lower reaches of the river throughout the year. Such counts, together with the catch data from local fisheries allows estimates to be made of the fishery performance and stock levels at identifiable points within the lower river. Further, partitioning these counts and catches into seasonal components, permits such assessments to be made at sub-catchment scales. In the current study, trends in the fisheries and stock of the North Esk were assessed at a whole river level and for four age/seasonal run-timing components (early 1SW, late 1SW, early MSW and late MSW) for the period 1981-2001.

Analysis of annual count and catch data at whole river level shows that there has been a decreasing trend in the abundance of North Esk salmon to coastal waters, and similar decreasing trends in exploitation and catch, resulting in a stable number of salmon entering the river. Decreasing trends in in-river exploitation and catch have resulted in an increasing trend in potential spawners.

Although it was not possible to estimate the abundance of each seasonal component in coastal waters, analysis of the trends in abundance, exploitation and catch in the lower river for each of the four age/seasonal components of the stock suggest that there has been no trend in abundance over the study period. However, the significance of the observed downward trends in lower river exploitation varies among the groups and as a result, increasing trends in the upper river abundance are significant for only the early 1SW and early MSW components. Due to the absence of any significant trends in exploitation and catch in the upper river, the increasing trends in lower abundance for the two early running components are also evident in the estimated abundance of potential spawners.

In summary, the results show that although the overall abundance of North Esk salmon returning to coastal waters has decreased, reduced exploitation has resulted in an increasing trend in the abundance of potential spawners. Further, local management actions to protect early running fish, the stock component thought to be most at rapidly declining (Youngson *et al*, 2002), appear to be having some effect. More generally, the analysis illustrates that trends in the abundance may vary among different stock components within a river system, as will the results of management measures that are implemented non-uniformly over a fishing season. There is thus a need to develop assessment methods that operate at scales that more closely mirror the population structure within river systems.

4.3.2 *Gyrodactylus salaris* in Sweden

The monogenean parasite *Gyrodactylus salaris* spread from the Baltic region to Norwegian rivers in the 1970s and its devastating impact on Norwegian wild salmon is well known (Johnsen and Jensen 1991). However, the effects of the parasite on Swedish west coast salmon have not been well described. The parasite was first found in this region in 1989 and since that time it has spread gradually. By autumn 2002, 11 out of a total of 23 wild salmon rivers harboured the parasite. These rivers are mainly located along the southern part of the Swedish west coast. A programme implemented to monitor the spread of the parasite to new rivers has been gradually improved, and parasite infestations in three infected rivers are also monitored annually.

Evidence that the parasite has had a negative impact on salmon in the region comes from trends in parr densities over time in infected and uninfected populations. In uninfected rivers, densities of older salmon parr, and to a smaller extent also 0+ parr, have generally been trending upwards between 1988 –2002, whereas in the same time period a number of infected rivers have had exhibited significant downward trends in parr densities. However, other factors such as low water discharges, may be partially responsible for the observed decreases.

A large scale survey of the parasite in the Baltic river Torneälven in 2001 revealed that the parasite was common on salmon parr. This was in contrast to earlier investigations. The prevalence and intensity varied among different parts of the river (from 0% infected to 100% infected with up to 330 parasites per fish) which suggested that earlier studies on geographically limited scales studies may not have been able to adequately describe infestation levels. It is also possible that the abundance of the parasite has increased in recent years, when the parr densities in most Baltic rivers have increased dramatically, boosting the probability of transmission. It is not known if the parasite is also common in other Baltic salmon rivers.

In the last few years Sweden has begun to take the threat of the parasite more seriously, and infection with *Gyrodactylus salaris* became a notifiable disease in Sweden in 2002. There are also regulations concerning the release of fish in non-infected wild salmon rivers of the west coast. Releases of fish are allowed if they are from a hatchery free of the parasite. At this time it is also allowed to treat infected fish to kill the parasites before release, but this option is under debate and may be abolished.

4.3.3 Considerations for examining the effects of fisheries on biological characteristics of Atlantic salmon stocks

In 1984, the commercial fisheries of the Maritime provinces (Canada) were closed and anglers were prohibited from retaining large salmon (>= 63 cm fork length). The Newfoundland commercial fisheries were closed in 1992, in 1998 in Labrador, and by 2000 in all of eastern Canada. Fisheries can be selective for particular sizes of fish, because of the gear being used, or selective to particular run components because of restrictions in seasons. As a result responses to fisheries in addition to returns and spawners may be evident in other features of the salmon stock such as :

Returns as indicators of stock responses to variations in fisheries exploitation:

b) Egg depositions and juvenile abundance:

For both of these indices the analyses indicated variations in responses following the closure periods but no consistant pattern was evident for all areas potentially benefiting from the closures.

c) Increases in occurrence, abundance and return rates of repeat spawners:

Atlantic salmon returning to the Miramichi have been sampled during the entire spawning migration period at estuary trapnets from 1971 to 2002. After the closures of the commercial fisheries in 1984 and the mandatory release of all large salmon, the relative proportion and the absolute abundance of repeat spawners in the returns of large salmon have increased. Since 1995, salmon with six previous spawnings have been observed in the returns to the Miramichi and salmon on the third to fifth spawnings are more abundant since 1992 (Figure 4.3.3.1). There are fewer repeat spawner components in the Saint John River than in the Miramichi and there has not been any change in relative proportions over time as was seen in the Miramichi. The post-spawner survival in the Saint John River is likely constrained by downstream fish passage through 2 to 3 hydro-generating facilities which cannot be managed like the fishing exploitation rates on the Miramichi stock. For the Saint John River, therefore, reduced fisheries exploitations have not resulted in improved post-spawner survivals.

In addition to being more abundant in recent years, repeat spawners from the Miramichi grow substantially between spawning events and 1SW maiden salmon on their second spawning are as large as 2SW maiden fish and 2SW salmon are as large or larger than comparative 3SW salmon in other rivers. These larger fish of proportionally greater abundance in the river are of interest to the recreational fishermen, produce more eggs per fish than maiden spawners, and provide a buffer to the annual spawning escapement when smolt to maiden spawner survivals are low.

d) Change in size-at-age resulting from size-selective fishing:

Salmon fishing gears are potentially size-selective. In the Miramichi, the mean size of 2SW salmon increased in 1986. The 2SW salmon from 1999 to 2002 are the largest of the time series. The mean size of the 1SW salmon of the last four years is the largest of the time series and the change in size was also first observed in 1986. An increase in mean size of 1SW salmon was observed in the Nashwaak River where mean size in 1972 and 1973 was 53-54 cm in contrast to the 56-58 cm mean size in the 1990s. In the Saint John River, the mean size of 1SW salmon averaged between 58 and 59 cm prior to 1986 and increased from 60 and 62 cm since. The change in mean size occurred in 1986 in both the Saint John and Miramichi samples when the commercial fisheries were supposedly closed in 1984. It is possible that exploitation with nets was still taking place on these stocks in 1984 and 1985.

e) Variations in run-timing:

Many historical commercial fisheries were prosecuted early in the season and frequently not in proportion to the timing of the fish entering the river. Evidence of the effect of fisheries exploitation in coastal waters relative to the time of entry of salmon to rivers is available from the Millbank index trapnet in the Miramichi River. The date of the 50th percentile of the count of large salmon at Millbank in the 1950 and 1960s was post Sept. 1 and it got rapidly earlier in 1970 to 1972 to the end of June or middle of July. Since 1984, the date of the median count has varied between the end of June and the end of August while in the 1990s,the median date oscillated around mid-August. Run-timing of both small and large salmon is currently bimodal with a peak in July and a second peak in late September.

f) Indications of homewater effects relative to variations in high seas exploitation:
The fishery at West Greenland exploits predominantly 1SW salmon destined to mature and return as 2SW salmon the following year. Significant associations between 1SW salmon returning to rivers in any given year and 2SW salmon returns the following year have been reported, which suggests that there is an underlying stock-specific average maturation schedule for 1SW and 2SW age groups. Deviations from the relationship would result from disproportionate variations in first year and second year mortalities both natural and fisheries induced (because the fishery exploits one age group and not the other), changes in maturation profiles of males and females leading to deviations from average 1SW/2SW relationships (as influenced by the environment, for example). If a fishery exploits the 2SW age group but not the 1SW age group, then the 1SW/2SW ratio should be unnaturally high. If fisheries exploit 1SW age group preferentially, then the 1SW/2SW ratio would be unnaturally low. The absence of exploitation on one age group can be used to assess the relative impacts of the fishery on the other age group. Since 1992, there is essentially no exploitation on 1SW salmon in the marine environment. Variations in 2SW returns to eastern Canada, but specifically variations from the 1SW/2SW relationship, may be exaggerated by variations in fisheries harvests at West Greenland.

This effect was examined using data from the LaHave River, Saint John River at Mactaquac, and the Miramichi River. In both the LaHave and Southwest Miramichi relationships, the 2SW returns in 1993 are exceptionally low relative to the 1SW returns in 1992. There is a negative association between the level of harvest at West Greenland and the difference from expected (based on the 1SW/2SW relationship) in the 2SW returns (Figure 4.3.3.2). For all rivers and stocks (wild, hatchery) examined, the correlation coefficient of GN1 was consistently negative.

For the Southwest Miramichi, Northwest Miramichi, and LaHave River wild salmon, including Greenland catch of North American origin 1SW salmon resulted in a reduction in the residuals of the 2SW prediction. For the Nashwaak River and the hatchery salmon from the Saint John River, consideration of the Greenland harvest did not contribute to describing the variations in 2SW return corrected for variation in 1SW return the previous year (Figure 4.3.3.2). Variations in high seas exploitation at Greenland can be detected in the returns of 2SW salmon in home waters in the Maritimes, but only after correcting for the 1SW abundance of the same cohort.

4.3.4 Data Storage Tag (DST) tagging of pre-adult salmon

As part of a Nordic DST tagging programme started in 2002, a new salmon trawl design and a modified "Fish-lifter" (after Holst & McDonald 2000) was developed for the live capture of fish in post-smolt and mackerel investigations in the Norwegian Sea This was used by Norway, Faroes and Iceland to capture fish for tagging with DSTs during 2002-2003. The modified "Fish Lifter" allows most of the salmon to be taken with little or no external damage, making the catch fit for tagging and release.

Faroese and Icelandic research vessels captured a significant number of large "autumn" post-smolts/ pre adults during late October 2002 to January 2003. As the Norwegian research vessel was fishing in the mid part of the Norwegian Sea in June and July, the catches of adult salmon were low, although a large number of post-smolts were taken. In the summer, however, the post-smolts were too small to be tagged with the DSTs available (38.4 x 12.5 mm).

The tags were placed in the body cavity of the salmon through a small incision above the pelvic fins. Two types of tags were used, an "I- button" tag (Dallas Semiconductor) recording only temperature (memory capacity approx. 12,000 recordings) and a depth and temperature recording tag with a memory capacity of 21,738 measurements per parameter (Star Oddi "Micro"). The tags will record these parameters for two years during the time lapse from tagging to retrieval of the tags. The temperature regime encountered and the vertical migration patterns of the salmon can thus be followed for the marine feeding cycle, and in most cases also for the homing back to the river.

A total of 197 post-smolts, pre-adults (fish < 45 cm) and 26 adults were taken; 76 of these were tagged with the "Micro" tags, and 51 with "I-buttons". About 50 % of the 17 adult salmon taken in the Norwegian cruise were fish farm escapees or maturing fish. This, together with the low number captured indicates that the areas around the Voering Plateau probably were surveyed too late to allow for sampling the densest cohorts of wild adult immature fish anticipated to be migrating northwards through these waters. One of the four fish tagged in the Norwegian Sea, turned up 18 days later in the bag net fishery in the Nansenfjord, Norway- a distance of ~ 480 km. The salmon taken in the Faroese tagging expedition were dominated by fish with 2 year smolt age, while 3 year and 1 year smolts made up ~ 20% and ~10 % respectively of the material analysed. In the Icelandic expedition, one fish carried an Irish microtag. All DST tagged fish were adipose fin clipped, but in the Icelandic expedition they were tagged with external tags (Floy tags) in addition. Once the fish are opened, the DST tags will be easily visible due to a fluorescent plastic tube attached to the tag body. The DSTs have a contact address and a reward announcement.

These results represent a breakthrough in marine tagging of pre-adults and adults. Once the tags start to be returned expectedly starting with the fishing season in 2002, they will yield results of significance for the knowledge of the marine life cycle of the salmon.

4.4 Long-term projections for stock rebuilding

Trajectories for stock rebuilding depend on many parameters which are not known with certainty or which may change over time. It is not possible to establish generalised trajectories for all stocks contributing to national or continental stock complexes as the range of uncertainty, both presently and in the future would lead to spurious projections over time on these larger scales. This is because the rate at which a stock complex will recover depends on the existing productive capacity of each individual stock under the prevailing conditions e.g. of exploitation, marine survival and effective intervention. Therefore, ICES considered theoretical rebuilding trajectories for stocks with known stock and recruitment parameters and the probability of extinction under different circumstances for some stocks in the USA which are well below their conservation limits. An example of a large-scale international stock rebuilding programme for Baltic salmon stocks is also provided to illustrate the rate of recovery of stocks currently undergoing restoration and rebuilding.

4.4.1 Recovery trajectories for reductions in exploitation of Atlantic salmon across a range of stock recruitment functions and uncertainty

Stock and recruitment curves representing highly productive stocks through low productive stocks were applied to a forward projecting stochastic framework that could produce recovery trajectories for a variety of states and exploitations. The purpose of this exercise was to estimate recovery times and frequency of achieving conservation over a 50 year time frame under a range of exploitation.

Parameters for Ricker stock and recruitment functions were obtained from SALMODEL (Anon 2003, Table 4.2) for the rivers Bush, North Esk and Nivelle. Although no North American river examples are presented, the H' parameters (exploitation at optimum spawning stock abundance) were within the known range of 11 North American rivers. Similarly, the age structure of the River Esk population is only out of phase by 1 age class compared to many North American stocks.

Projections were dependent on partial recruitment vectors particular for the river i.e. age structure, relative fecundity and mortality. A fully recruited age structure (i.e. all age classes expected are present and in the correct proportion) is assumed prior to initialisation of the model. Therefore, obtaining recruits for 7 years (the longest period required to obtain complete recruitment) initializes projections at the selected starting stock size before accumulating recruits for any trajectory. Error in trajectories was introduced by selecting a new value of *alpha* and *beta* for each year from the normal distribution of H' and the log normal distribution of R' reported. The reported stock recruitment scale was eggs*m^{-2}. Preliminary exploration of the models indicated the need for an egg density cap to constrain depositions in the stochastic trajectories. This was accomplished by constraining alpha to values less than 20.

Starting spawning stock sizes were 10% of S_{lim} and 50% of S_{lim}. Projections were run using exploitations of 0% (no exploitation), 50% of the current river exploitation, at the current exploitation rate and at H'. Forward simulations were run 10,000 times in an @Risk© framework in Excel© and the aggregated output collected to produce a trajectory with mean and variance for each year. The number of years required to rebuild to S_{lim} as well as the number of years during the 50 year projection below the S_{lim} were recorded for each simulation.

The alpha determinations ranged from a high of 14.93 for the Bush River, 2.13 for the North Esk and a low of 1.85 for the Nivelle (Table 4.4.1.1). Projections typically resulted in occasional highs and lows in a single trajectory however the 90% range of values generally followed the deterministic function (Figure 4.4.1.1). The years to recovery ranged from 1 to 50 years, the limit of the projections (Table 4.4.1.2); (Figure 4.4.1.2).

The proportion of years with values lower than S_{lim} ranged from 0.13 to 1 depending mostly on alpha and exploitation. This proportion for populations at less than S_{lim} and at H' was 0.49 for the high alpha, which is the expectation for a productive population managed at H' and based on well-defined parameters (Table 4.4.1.3). However, at lower alpha the frequencies were much greater (0.97 and 1) indicating high sensitivity of S_{lim} to variance in the parameters at low alpha values.

The number of years to recovery was unobtainable in fifty-year projections in a low productivity and possibly unobtainable in a moderate productivity river. This was because the recovery time in years was more dependent on the value of alpha (productivity) than the start point. The time to recovery and the proportion of annual recruitment less than the S_{lim} increased with lower productivity and the starting point. Recovery was particularly sensitive to increasing exploitation at lower alpha.

The data and analysis indicate that there is an increased probability of not achieving S_{lim} with increased exploitation and lower alpha. The model did not incorporate demographic stocasticity i.e. uncertainty in sex ratio, fecundity etc. or environmental stocasticity i.e. annual variations in survival that could eliminate a year class at low populations, that can lead to extirpations. Therefore while this model may not be a reliable indicator of population viability, it can provide reasonable indications of management actions concerning S_{lim} and exploitation. The analysis suggests that increased caution needs to be taken when assigning exploitation to low productivity stocks. It also suggests that current management strategies for mixed stock fisheries are likely to fail to protect "the weakest link" i.e. those stocks that are far below their S_{lim} and of low productivity. Similarly, expected contributions to rebuilding from restocking programmes may also be confounded by prevailing low levels of marine survival, high or variable exploitation rates and even negative interactions between hatchery reared fish and their wild counterparts (McGinnity et al, 1998, Ferguson et al, 2002).

4.4.2 Atlantic salmon population viability analysis for Maine (USA) distinct population segment

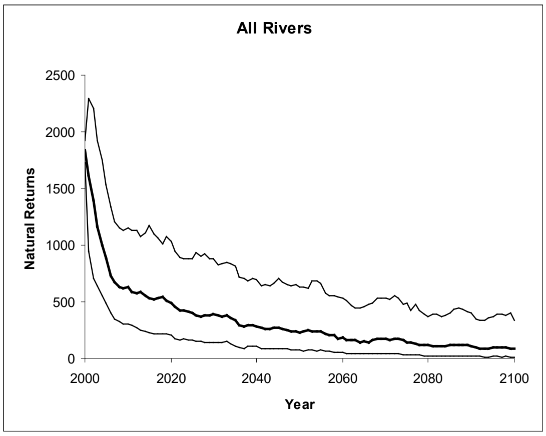
A population viability analysis (PVA) model has been developed for Atlantic salmon in Maine. This model incorporates uncertainty in juvenile and adult survival rates, direct and indirect linkages among populations in different rivers, and a number of potential human removals or stocking in a flexible, modular Fortran program named SalmonPVA. The structure of the model is based on a state-space approach with a detailed life history cycle. Multiple cohorts in multiple rivers progress through their life history based on stage specific survival rates and fecundity with limits imposed by riverine habitat capacity. The model projects the populations forward in time, usually 100 years, numerous times with stochastic variables selected based on a Monte Carlo approach to calculate the probability of extinction. Results from this model will form the basis for delisting criteria in the Recovery Plan for the Maine Distinct Population Segment which was listed as Endangered in 1999.

The SalmonPVA model was run using example ranges of survival rates for all life stages under conditions of no stocking and initial population sizes set at the conservation spawning escapement levels (CSE) for the eight rivers in the Maine DPS. Assumptions were made regarding straying, fishing, broodstock removal, etc. to demonstrate the bottom line predictive power of the model. Projecting the populations for 100 years for 10,000 iterations produced a low probability (0.2%) of all eight rivers going extinct, with high probabilities (45-84%) of individual rivers becoming extinct (see text table below).

Probability of extinction when all rivers seeded with CSE levels of 2SW returns, no stocking occurs, and example ranges of survival by life stage are assumed.

Rivers : DE=Dennys, EM=East Machias, MC=Machias, PL=Pleasant, NG=Narraguagus, CB=Cove Brook, DT=Ducktrap, SHP=Sheepscot

River	Probability
DE	18.2
EM	12.2
MC	6.1
PL	27.9
NG	6.7
CB	83.7
DT	44.7
SHP	18.3
ALL	0.2



Although the probability of extinction for all eight rivers combined is low, examination of the time trend during the 100 year projection shows that the combined returns are continuing to decline and may go extinct if more years were projected (see panel above).

4.4.3 Baltic Salmon Action Plan

The Baltic Salmon Action Plan (SAP), launched by the International Baltic Sea Fishery Commission (IBSFC) in 1997, aims to prevent extinction of wild salmon populations, to increase the natural smolt production of wild Baltic salmon to a level of 50% of the estimated potential capacity in each salmon river selected for the programme by 2010, and to re-establish wild populations in potential salmon rivers (Ranke 2002, www.ibsfc.org). A central element of the SAP was the reduction of the annual TAC in accordance with the SAP objectives, from the level of 760 000 salmon in early 1990's to a range of 510-540,000 salmon since 1997. Other measures taken to reach the SAP targets include stocking programmes, freshwater habitat restoration and national fishery regulations.

Some national restrictions of fishing effort in the Gulf of Bothnia have been launched in both Sweden and Finland, but the most significant development has been since Finland introduced the new temporal regulations for the Gulf of Bothnia coastal trap net fishery in 1996. After this the wild salmon stocks of many of the northern wild salmon rivers in Sweden and Finland have improved substantially (Romakkaniemi et al. 2003). In a recent EU Study project, the effects of fishing mortality on the returning salmon were modelled and it was shown to have reduced substantially after the coastal fishery regulations were introduced (Anon. 2002). As an example, the salmon catch in the River Tornionjoki, a border river between Finland and Sweden, increased three-to fivefold in 1996-1997 compared to the levels of the early 1990's. As well as the increased catches, the juvenile salmon (0+) densities also showed a marked increase as the mean density in 1998 was 30-fold higher than in early 1990's. Wild smolt production (Ranke 2002), has also increased substantially, and the estimated smolt run in e.g. Rivers Tornionjoki and Simojoki (Finland) have exceeded the 50% SAP reference level during the past three years (2000-2002). The increase in the wild smolt production was thus detectable after only four years following the corresponding management actions taken. It should be emphasised that this fast recovery was possible when the reduction in fishing mortality coincided with the return of the fish from the strong brood-year class of 1990 (Ranke 2002, Romakkaniemi et al. 2003).

The positive development in the Baltic salmon stocks has, however, been most pronounced in large, wild salmon rivers in the northern Gulf of Bothnia. Many potential salmon rivers in the Gulf of Bothnia have shown little or no signs of recovery. The status of many potential rivers prior to the SAP was very different from the wild salmon rivers, as the stocks were completely extinct and stock rebuilding started from introducing salmon from nearby stocks. The slow development in these rivers compared to that of the wild rivers can be attributed to several factors, ranging from genetic adaptation of the introduced stocks to smaller scale local problems in freshwater environment and fishery management (Erkinaro et al. 2003).

Direct extrapolation of the results from the Baltic SAP to Atlantic salmon situations would require more in-depth comparison of the underlying dynamics (i.e. mortality rates, exploitation rates and productivity) which may be very different. Despite this, it is clear that stock rebuilding is feasible and significant increases in wild stocks can be achieved over a short time frame provided the initial productivity is sufficiently high. Rebuilding from low productivity or even restoring extinct stocks appears to pose similar difficulties in both the Baltic and Atlantic areas. In this regard, the theoretical approaches presented in the previous two sections result in predictions which are consistent with the actual outcome from an ongoing stock rebuilding programme and illustrate the difficulties in rebuilding salmon stocks when stock levels fall below $S_{lim.}$ ICES therefore notes that in the provision of advice S_{lim} (MSY) point is the most appropriate limit reference points for Atlantic salmon populations.

4.5 Distribution, behavior and migration of farmed salmon

4.5.1 Methodology to improve knowledge on the distribution and movements of escaped farmed salmon

Farmed salmon that have escaped from sea cages can easily be identified in fisheries and stocks, but it is more difficult to detect fish that escaped as parr or smolt. Sampling and examination of salmon in marine areas at different times of the year, especially in areas that have not been sampled before, would improve the general knowledge of the spatial and temporal distribution of farmed salmon.

At present it is difficult to determine from which country or area farmed fish caught in the ocean originated from. To approach this problem, it would be feasible to tag farmed fish, conduct experimental "escapes", and determine the ultimate fate of the fish. Recoveries could come from existing fisheries, and planned scientific sampling programmes. A number of different tags and tagging procedures could be used, including:

- External tags (Carlin, Lea, Floy, etc.)
- Visible implant tags (including visual implant elastomers)

- Coded wire tags (CWT)
- Passive Integrated Transponder (PIT) tags
- Sonic tags
- Data storage tags (DST)
- Genetic tags
- Physiological tags (otholith marking, trace elements in bones and otoliths, fatty acids, etc.)

External tags can be reliably detected in fisheries and scientific sampling programmes. Visible implant tags can be recovered in sampling programmes, but may be difficult to detect for fishermen.

CWT tags are cheap, easy and quick to apply, and suitable for large numbers of fish. They can be easily detected providing an additional external mark is applied, but the removal of CWTs is time consuming. They are usually detected in scientific sampling programmes. In Iceland a mandatory 10 % of the farmed salmon released to coastal net pens are required to be CWT tagged.

PIT tags are easy to implant and detect, but have to be recovered in sampling programmes.

Sonic tags can be used to examine the behaviour of escaped farmed salmon following their escape providing the fish remain within receiver detection range. Fish can be actively tracked, or detected at fixed locations where receivers are moored, however detection ranges may be short (500m). Acoustic tags and equipment are very expensive, which limits the number of fish that can be marked and released.

Data storage tags are new technologies, and are still expensive. However, information on the behaviour (postion, environmental conditions, movements) of the recovered fish will be significant. Tagged fish can be recovered in sampling programmes or by fishermen.

Genetic and physiological tagging are new methods that can be used for mass marking. However, ”tagged” individuals have to be recovered in sampling programmes, and the marks are expensive to identify.

4.5.2 Experimental tagging programme for investigating the behaviour of escaped farmed salmon

To test the hypotheses that salmon escaping from fish farms in the Northeast Atlantic are homeless, transported with the currents, enter fisheries and rivers in other countries than the one they escaped from, or are lost in the Arctic, several tagging programmes using different tag types could be developed. Below a simple programme using individually numbered external tags that can be recovered both from fishermen and in sampling programmes is outlined, including a pilot project to be expanded to a main project. The programme is expected to give information on migration, distribution, survival and growth of escaped farmed salmon.

1. Pilot project

This should be carried out to compare migration and distribution of one single group (500-1000) of farmed salmon released in each of the countries producing farmed salmon (i.e. Ireland, Scotland, Faroes, Iceland and Norway). To maximise the probability for recaptures ((ICES CM 2001/ACFM:15; Hansen 2002) the farmed salmon to be released should be expected to be sexually mature the following autumn and should preferably be released in March/April. External tags of the same origin and type should be used, and the releases should be co-ordinated in time. The recovery information should be used for developing a detailed design of the main project.

2. Main project

Groups of externally tagged farmed salmon should be released sequentially over the year (e.g. monthly, bimonthly etc), or over periods when escapes from salmon farms are known to occur, usually during the winter. The fish should be released in the same countries as suggested above, and the numbers of tagged fish in each group should be optimised based on results from the pilot project. The releases should be coordinated and the same types of tags should be applied. This exercise is expected to give information on variation in migration, distribution, survival and growth of salmon escaping from fish farms at different times of the year.

Given the large numbers of farmed salmon escaping from cages in the Northeast Atlantic, the number of farmed salmon released for the purpose of this experiment will only be a small fraction of the total number of escaping salmon.

4.5.3 Sonic tracking of escapees in Maine (USA)

An experimental release of farmed salmon fitted with acoustic tags is planned to start in the Cobscook Bay region of Maine in autumn, 2003. This region produces the majority of the USA's east coast farmed Atlantic salmon, and adjoins Canada's Bay of Fundy region where the Canadian east coast industry is concentrated. The goals of the study are to:

Document the residency time of "escaped" fish in the vicinity of the cages following the release.
Track the directions and rates of any movements that the fish exhibit, and correlate them with tidal currents and other environmental cues.
Based on histories of detection of the tagged fish on the receiver grid, attempt to determine their survival time at sea.
Maintain a cross border detection grid in order to document the degree to which escapees stray between US and Canadian waters.
Determine if the fish tend to move to particular rivers in the region at spawning time, presuming they survive for this long.

The project will provide short to medium term information about rates of dispersal of farmed fish, post-escape. Results should help with the development of recapture strategies, or if the program shows that the fish in this region are not likely to be recaptured, it will refocus efforts and scarce resources on insuring containment.

4.6 Compilation of Tag Releases and Finclip Data by ICES Member Countries in 2002

4.6.1 Compilation of tag releases and finclip data for 2002

Data on releases of tagged, fin-clipped, and marked salmon in 2002 were provided by ICES and are compiled as a separate report. A summary of Atlantic salmon marked in 2002 is given in Table 4.6.1. About 4.1 million salmon were marked in 2002, an increase from the 3.88 million fish marked in 2001. Tagging with data storage tags (DSTs) is not presently recorded on the database, but ICES will include these tags from 2004. The Working Group noted that a number of commercial fish farms are applying tags to fish placed in sea cages in some countries and hence these might appear in fisheries if escapes occurred. ICES recommended that state agencies should provide information on tag codes applied in these instances and this should be included in the tag compilation.

4.7 General recommendations, Data deficiencies and research needs

Note: Recommendations in bold italics refer to items which may involve or be of particular relevance to NASCO

Recommendations from Section 4- Atlantic salmon in the North Atlantic Area:

1. ***ICES recommends that information on the application of tags to salmon placed in sea cages by commercial companies should be made available through State agencies and included in the tag compilation database, and requests that NASCO put this recommendation to its Aquaculture Liaison Committee.***

2. Given the importance of M in the provision of catch advice and in the understanding of the dynamics of Atlantic salmon in the ocean, and in order to refine the assessment of M with the maturity schedule method, hatchery stocking programs should attempt to confirm the sex ratio of the released smolts

3. ICES recommends that life history characteristics of salmon stocks including age structure, length at age, relative and absolute abundance of repeat spawners, run-timing and other such features be examined for Atlantic salmon stocks to ensure that conservation of salmon extends beyond abundance.

4. ***A coordinated tagging study should be designed and carried out to give information on migration, distribution, survival and growth of escaped farmed salmon from the NEAC countries.***

Recommendations from Section 5 - Fisheries and Stocks from the North East Atlantic Commission Area:

1. Further progress should be made in establishing a PFA predictive model using the PFA of maturing 1SW salmon, in addition to the spawner term, as a predictor variable for the PFA of non-maturing 1SW in the Northern NEAC area.

2. ***Surveys should be extended to provide better temporal and spatial information on the distribution of post-smolts in relation to pelagic fisheries*.**

3. ***Experimental trawling surveys should be conducted to evaluate the vertical distribution of post-smolts and older salmon in the sea, if possible in combination with tagging of post-smolt and salmon with depth and temperature recording tags (DSTs).***

4. ***Studies on post-smolts and older salmon should be extended to elucidate behaviour patterns at sea and to investigate their behaviour in relation to different commercial gear types (e.g. pelagic trawls, purse seines)***

Recommendations from Section 6- Fisheries and Stocks from the North American Commission Area:

1. Estimates of total returns to Labrador no longer exist. There is a critical need to develop alternate methods to derive estimates of salmon returns and develop habitat-based spawner requirements in Labrador, and to monitor salmon returns in the Ungava region of Québec.

2. There is a need to investigate changes in the biological characteristics (mean weight, sex ratio, sea-age and river-age composition) of returns to rivers, of smolt output, of spawning stocks of Canadian and US rivers, and the harvest in food fisheries in Labrador. These data and new information on measures of habitat and stock recruitment are necessary to re-evaluate existing estimates of spawner requirements in Canada and USA and for use in the run reconstruction model.

3. There is a requirement for additional smolt-to-adult survival rates for wild salmon. As well, sea survival rates of wild salmon from rivers stocked with hatchery smolts should be examined to determine if hatchery return rates can be used as an index of sea survival of wild salmon elsewhere.

4. ***Further basic research is needed on the spatial and temporal distribution of salmon and their predators at sea to assist in explaining variability in survival rates.***

5. Return estimates for the few rivers (Annapolis, Cornwallis and Gaspereau) in SFA 22 that contribute to distant fisheries should be developed and when these are available, the SFA 22 spawning requirements for these rivers (476 fish) should be included in the total.

6. A consistent approach to estimating returns is needed for instances in which offspring from broodstock are stocked back into the management area from which their parents originated.

Recommendations from Section 7 - Atlantic Salmon in the West Greenland Commission Area:

1. ***Continued efforts should be made to improve the estimates of the annual catches of salmon taken for private sales and local consumption in Greenland.***

2. ***The mean weights, sea and freshwater ages and continent of origin are essential parameters to provide catch advice for the West Greenland fishery. ICES recommends that the sampling program be continued and closely coordinated with fishery harvest plan to be executed annually in West Greenland.***

3. ***Scale analysis of salmon captured at West Greenland indicated an infrequent appearance of escaped-farm salmon. To investigate this observation, farmed salmon need to be genetically characterized and included as baseline populations in continent of origin analyses of samples collected at West Greenland.***

4. ***Continue testing for ISAv and other diseases in Atlantic salmon caught in West Greenland.***

5. ***CPUE was not available in 2002 in West Greenland. Thus, there is a need to collect more refined data characterizing fishing effort to characterize availability of Atlantic salmon.***

6. Development of alternative in-season measures of abundance such as relationships between 1SW returns to rivers from the same cohort should be investigated as a future source of confirmatory information of abundance.

7. ***Further basic research is needed on the spatial/temporal distribution and migration patterns of salmon and their predators at sea to assist in explaining variability in survival rates. Other indices of change, i.e. changes in age composition, size at age and sea survival, should also be included in this analysis.***

8. ICES endorses the continued development of genetic methods that will increase the precision and accuracy of the classification of stock complexes within and among continents, countries, and individual rivers, and recommends

   - to further evaluate the extent to which the genetics of stocks have been characterized within each country, and share that information at the ICES Working Group meeting in 2004.

   - that all efforts be made to extend the spatial and temporal coverage of existing baseline genetic dataset for North Atlantic salmon stocks, especially those vulnerable to mixed stock fisheries, while making efforts to duplicate tissue sample representation across different laboratories.

   - that an inventory of genetic material, particularly from historic scale samples and samples taken prior to significant management measures or ecological events, be assembled and that inter-laboratory calibration and standardization should be carried out to ensure optimal use of existing samples and samples to be taken in future.

9. ***To compute the probability of of achieving a given level of stock increase for the USA and Scotia-Fundy regions of North America, ICES used the recent 5 year average of returns. ICES notes that if a moving average continues to be used, and these stocks continue to decline then the baseline average will also decline. ICES, therefore, draws the attention of NASCO of the need to establish the range of years to define the baseline and the percentage increase in stocks required for their management objectives (currently ICES have arbitrarily used 10% or 25% examples in the advice to NASCO). This will provide ICES with the criteria to assess performance of these fisheries relative to the management objective.***

Table 4.1.1.1 Nominal catch of SALMON by country (in tonnes round fresh weight of fish caught and retained), 1960 – 2002. (2002 figures include provisional data).

	NAC Area			NEAC (N. Area)							NEAC (S. Area)						Faroes & Greenland				Total	Unreported catches	
Year	Canada (1)	USA	St. P. & M.	Norway (2)	Russia (3)	Iceland Wild	Iceland Ranch	Sweden (West)	Den.	Finland	Ireland (4,5)	UK (E & W)	UK (N.Irl.) (5,6)	UK (Scotl.)	France	Spain (7)	Faroes (8)	East Grld.	West Grld. (9)	Other (10)	Reported Nominal Catch	NASCO Areas	International waters (11)
1960	1636	1	-	1659	1100	100		40	-	-	743	283	139	1443	-	33	-	-	60	-	7237	-	-
1961	1583	1	-	1533	790	127		27	-	-	707	232	132	1185	-	20	-	-	127	-	6464	-	-
1962	1719	1	-	1935	710	125		45	-	-	1459	318	356	1738	-	23	-	-	244	-	8673	-	-
1963	1861	1	-	1786	480	145		23	-	-	1458	325	306	1725	-	28	-	-	466	-	8604	-	-
1964	2069	1	-	2147	590	135		36	-	-	1617	307	377	1907	-	34	-	-	1539	-	10759	-	-
1965	2116	1	-	2000	590	133		40	-	-	1457	320	281	1593	-	42	-	-	861	-	9434	-	-
1966	2369	1	-	1791	570	104	2	36	-	-	1238	387	287	1595	-	42	-	-	1370	-	9792	-	-
1967	2863	1	-	1980	883	144	2	25	-	-	1463	420	449	2117	-	43	-	-	1601	-	11991	-	-
1968	2111	1	-	1514	827	161	1	20	-	-	1413	282	312	1578	-	38	5	-	1127	403	9793	-	-
1969	2202	1	-	1383	360	131	2	22	-	-	1730	377	267	1955	-	54	7	-	2210	893	11594	-	-
1970	2323	1	-	1171	448	182	13	20	-	-	1787	527	297	1392	-	45	12	-	2146	922	11286	-	-
1971	1992	1	-	1207	417	196	8	18	-	-	1639	426	234	1421	-	16	-	-	2689	471	10735	-	-
1972	1759	1	-	1578	462	245	5	18	-	32	1804	442	210	1727	34	40	9	-	2113	486	10965	-	-
1973	2434	2.7	-	1726	772	148	8	23	-	50	1930	450	182	2006	12	24	28	-	2341	533	12670	-	-
1974	2539	0.9	-	1633	709	215	10	32	-	76	2128	383	184	1628	13	16	20	-	1917	373	11877	-	-
1975	2485	1.7	-	1537	811	145	21	26	-	76	2216	447	164	1621	25	27	28	-	2030	475	12136	-	-
1976	2506	0.8	2.5	1530	542	216	9	20	-	66	1561	208	113	1019	9	21	40	<1	1175	289	9327	-	-
1977	2545	2.4	-	1488	497	123	7	10	-	59	1372	345	110	1160	19	19	40	6	1420	192	9414	-	-
1978	1545	4.1	-	1050	476	285	6	10	-	37	1230	349	148	1323	20	32	37	8	984	138	7682	-	-
1979	1287	2.5	-	1831	455	219	6	12	-	26	1097	261	99	1076	10	29	119	<0,5	1395	193	8118	-	-
1980	2680	5.5	-	1830	664	241	8	17	-	34	947	360	122	1134	30	47	536	<0,5	1194	277	10127	-	-
1981	2437	6	-	1656	463	147	16	26	-	44	685	493	101	1233	20	25	1025	<0,5	1264	313	9954	-	-
1982	1798	6.4	-	1348	364	130	17	25	-	54	993	286	132	1092	20	10	606	<0,5	1077	437	8395	-	-
1983	1424	1.3	3	1550	507	166	32	28	-	58	1656	429	187	1221	16	23	678	<0,5	310	466	8755	-	-
1984	1112	2.2	3	1623	593	139	20	40	-	46	829	345	78	1013	25	18	628	<0,5	297	101	6912	-	-
1985	1133	2.1	3	1561	659	162	55	45	-	49	1595	361	98	913	22	13	566	7	864	-	8108	-	-
1986	1559	1.9	2.5	1598	608	232	59	54	-	37	1730	430	109	1271	28	27	530	19	960	-	9255	315	-
1987	1784	1.2	2	1385	564	181	40	47	-	49	1239	302	56	922	27	18	576	<0,5	966	-	8159	2788	-
1988	1310	0.9	2	1076	420	217	180	40	-	36	1874	395	114	882	32	18	243	4	893	-	7737	3248	-
1989	1139	1.7	2	905	364	141	136	29	-	52	1079	296	142	895	14	7	364	-	337	-	5904	2277	-
1990	911	2.4	1.9	930	313	146	280	33	13	60	567	338	94	624	15	7	315	-	274	-	4924	1890	180-350

Table 4.1.1.1 cont'd.

	NAC Area			NEAC (N. Area)							NEAC (S. Area)						Faroes & Greenland				Total	Unreported catches	
Year	Canada (1)	USA	St. P. & M.	Norway (2)	Russia (3)	Iceland Wild	Iceland Ranch	Sweden (West)	Den.	Finland	Ireland (4,5)	UK (E & W)	UK (N.Irl.) (5,6)	UK (Scotl.)	France	Spain (7)	Faroes (8)	East Grld.	West Grld. (9)	Other (10)	Reported Nominal Catch	NASCO Areas	International waters (11)
1991	711	0.8	1.2	876	215	130	345	38	3.3	70	404	200	55	462	13	11	95	4	472	-	4106	1682	25-100
1992	522	0.7	2.3	867	167	175	461	49	10	77	630	171	91	600	20	11	23	5	237	-	4119	1962	25-100
1993	373	0.6	2.9	923	139	160	496	56	9	70	541	248	83	547	16	8	23	-	-	-	3696	1644	25-100
1994	355	0	3.4	996	141	141	308	44	6	49	804	324	91	649	18	10	6	-	-	-	3945	1276	25-100
1995	260	0	0.8	839	128	150	298	37	3.1	48	790	295	83	588	9	9	5	2	83	-	3628	1060	-
1996	292	0	1.6	787	131	122	239	33	1.7	44	687	183	77	427	14	7	-	0.1	92	-	3138	1123	-
1997	229	0	1.5	630	111	106	50	19	1.3	45	570	142	93	296	8	3	-	1	58	-	2364	827	-
1998	157	0	2.3	740	131	130	34	15	1.3	48	624	123	78	283	9	4	6	0	11	-	2397	1210	-
1999	152	0	2.3	811	103	120	26	16	0.5	62	515	150	53	199	11	6	0	0.4	19	-	2246	1032	-
2000	153	0	2.3	1176	124	83	2	33	5.2	95	621	219	78	274	11	7	8	0	21	-	2913	1269	-
2001	148	0	2.2	1267	114	88	0	33	6.4	126	730	184	53	251	11	13	0	0	43	-	3069	1180	-
2002	148	0	3.6	1019	118	92	0	28	5.3	93	673	161	64	190	12	9	0	0	9	-	2625	1033	-
Average																							
1997-2001	168	0	2	925	117	105	22	23	3	75	612	164	71	261	10	7	4	0	30	-	2598	1104	-
1992-2001	264	0	2	904	129	128	191	33	4	66	651	204	78	411	13	8	9	1	71	-	3151	1258	-

Key:

1. Includes estimates of some local sales, and, prior to 1984, by-catch.
2. Before 1966, sea trout and sea charr included (5% of total).
3. Figures from 1991 to 2000 do not include catches taken in the recently developed recreational (rod) fishery.
4. From 1994, includes increased reporting of rod catches.
5. Catch on River Foyle allocated 50% Ireland and 50% N. Ireland.
6. Not including angling catch (mainly 1SW).
7. Weights prior to 1990 are estimated from 1994 mean weight. Weights from 1990 to 1999 based on mean weight for R. Asturias.
8. Between 1991 & 1999, there was only a research fishery at Faroes. In 1997 & 1999 no fishery took place, the commercial fishery resumed in 2000, but has not operated in 2001 or 2002.
9. Includes catches made in the West Greenland area by Norway, Faroes, Sweden and Denmark in 1965-1975.
10. Includes catches in Norwegian Sea by vessels from Denmark, Sweden, Germany, Norway and Finland.
11. Estimates refer to season ending in given year.

Table 4.1.3.1 Estimates of unreported catches by various methods in tonnes within national EEZs in the North-East Atlantic, North American and West Greenland Commissions of NASCO, 1987-2002.

Year	North-East Atlantic	North-American	West Greenland	Total
1987	2,554	234	-	2,788
1988	3,087	161	-	3,248
1989	2,103	174	-	2,277
1990	1,779	111	-	1,890
1991	1,555	127	-	1,682
1992	1,825	137	-	1,962
1993	1,471	161	< 12	1,644
1994	1,157	107	< 12	1,276
1995	942	98	20	1,060
1996	947	156	20	1,123
1997	732	90	5	827
1998	1,108	91	11	1,210
1999	887	133	12.5	1,032
2000	1,135	124	10	1,269
2001	1,089	81	10	1,180
2002	946	83	10	1,039
Mean 1997-2001	990	104	10	1104

Table 4.4.1.1. Stock and recruitment (Ricker) parameters and standard deviations of parameters for Atlantic salmon in 3 rivers of western Europe (Anon 2003).

River	H'	SDH'	R'	SDR'	Alpha	Beta	S_{lim}
Bush	0.73	0.07	13.64	11.57	14.93	0.20	3.6828
North Esk	0.43	0.17	27.51	29.44	2.13	0.03	15.6807
Nivelle	0.38	0.11	0.94	0.28	1.85	0.65	0.5828

Table 4.4.1.2. Mean number of years to attain recruitment of Atlantic salmon to S_{lim} with 90% confidence ranges in three rivers with high to low productivity (alpha) using their respective fitted stock and recruitment curves for two starting points and three fisheries exploitation scenarios.

River			Start at 0.1 of S_{lim}		Start at 0.5 of S_{lim}	
	Exploitation	Rate	Mean	5th - 95th	Mean	5th - 95th
Bush						
alpha	Zero	0	1.4	(1 - 4)	1.0	(1 - 1)
(14.93)	Half Current	0.2645	2.6	(1 - 5)	1.0	(1 - 1)
beta	Current	0.529	5.0	(4 - 7)	1.1	(1 - 2)
(0.20)	H'	0.73	8.6	(5 - 14)	2.5	(1 - 7)
North Esk						
alpha	Zero	0	13.6	(6 - 24)	5.2	(1 - 14)
(2.13)	Half Current	0.079	15.9	(6 - 28)	6.7	(1 - 18)
beta	Current	0.158	19.3	(7 - 37)	9.1	(1 - 25)
(0.03)	H'	0.430	41.1	(15 - 50)	29.1	(1 - 50)
Nivelle						
alpha	Zero	0	13.7	(9 - 18)	4.8	(1 - 8)
(1.85)	Half Current	0.011	14.1	(9 - 19)	5.0	(1 - 8)
beta	Current	0.022	14.5	(10 - 19)	5.2	(1 - 9)
(0.65)	H'	0.380	49.4	(50 - 50)	46.4	(16 - 50)

Table 4.4.1.3. Proportion of annual recruitment in 10,000 fifty year projections of Atlantic salmon that were below S_{lim} with 90% confidence ranges in three rivers with high to low productivity (alpha) using their respective fitted stock and recruitment curves for two starting points and three fisheries exploitation scenarios.

River			Start at 0.1 of S_{lim}		Start at 0.5 of S_{lim}	
	Exploitation	Rate	Mean	5th - 95th	Mean	5th - 95th
Bush						
alpha	Zero	0	0.14	(0.06 - 0.22)	0.13	(0.06 - 0.22)
(14.93)	Half Current	0.2645	0.18	(0.1 - 0.26)	0.14	(0.06 - 0.24)
beta	Current	0.529	0.25	(0.16 - 0.36)	0.19	(0.1 - 0.3)
(0.20)	H'	0.73	0.49	(0.32 - 0.66)	0.42	(0.26 - 0.58)
North Esk						
alpha	Zero	0	0.52	(0.32 - 0.74)	0.41	(0.2 - 0.66)
(2.13)	Half Current	0.079	0.62	(0.38 - 0.84)	0.52	(0.28 - 0.76)
beta	Current	0.158	0.73	(0.5 - 0.94)	0.64	(0.4 - 0.88)
(0.03)	H'	0.430	0.97	(0.88 - 1)	0.95	(0.84 - 1)
Nivelle						
alpha	Zero	0	0.27	(0.2 - 0.36)	0.10	(0.04 - 0.16)
(1.85)	Half Current	0.011	0.28	(0.2 - 0.38)	0.10	(0.04 - 0.18)
beta	Current	0.022	0.29	(0.2 - 0.38)	0.11	(0.04 - 0.18)
(0.65)	H'	0.380	1.00	(1 - 1)	1.00	(0.98 - 1)

Table 4.6.1. Summary of Atlantic salmon tagged and marked in 2002. 'Hatchery' and 'Wild' refer to smolts or parr; 'Adult' refers to wild and hatchery fish. Data from Belgium were not available. Fish were not tagged in Finland or Denmark. PIT tags were not included.

Country	Origin	Primary Tag or Mark			
		Microtag	External mark	Adipose clip	Total
Canada	Hatchery	0	45,346	2,328,471	2,373,817
	Wild	0	28,194	501	28,695
	Adult	0	5,777	0	5,777
	Total	0	79,317	2,328,972	2,408,289
Spain	Hatchery	18,150	0	67,700	85,850
	Wild	0	0	0	0
	Adult	0	0	0	0
	Total	18,150	0	67,700	85,850
France	Hatchery	0	39,950	405,482	445,432
	Wild	0	0	0	0
	Adult	0	0	0	0
	Total	0	39,950	405,482	445,432
Iceland	Hatchery	142,777	0	0	142,777
	Wild	1,218	0	0	1,218
	Adult	0	355	0	355
	Total	143,995	355	0	144,350
Ireland	Hatchery	348,949	0	0	348,949
	Wild	3,610	0	0	3,610
	Adult	0	0	0	0
	Total	352,559	0	0	352,559
Norway	Hatchery	41,308	48,714	0	90,022
	Wild	0	5,038	0	5,038
	Adult	0	178	0	178
	Total	41,308	53,930	0	95,238
Russia	Hatchery	0	2,000	130,400	132,400
	Wild	0	0	0	0
	Adult	0	2,208	0	2,208
	Total	0	4,208	130,400	134,608
Sweden	Hatchery	0	4,966	24,994	29,960
	Wild	0	497	0	497
	Adult	0	0	0	0
	Total	0	5,463	24,994	30,457
UK (England & Wales)	Hatchery	57,056	4,304	119,081	180,441
	Wild	6,082	0	1,515	7,597
	Adult	0	1,418	0	1,418
	Total	63,138	5,722	120,596	189,456
UK (N. Ireland)	Hatchery	28,035	0	18,128	46,163
	Wild	1,043	0	0	1,043
	Adult	0	0	0	0
	Total	29,078	0	18,128	47,206
UK (Scotland)	Hatchery	17,045	0	0	17,045
	Wild	15,974	0	0	15,974
	Adult	0	1,120	0	1,120
	Total	33,019	1,120	0	34,139
USA	Hatchery	0	137,920	0	137,920
	Wild	0	1,280	0	1,280
	Adult	0	2,787	0	2,787
	Total	0	141,987	0	141,987
All Countries	Hatchery	653,320	283,697	3,094,256	4,030,776
	Wild	27,927	34,512	2,016	64,952
	Adult	0	13,843	0	13,843
	Total	681,247	332,052	3,096,272	4,109,571

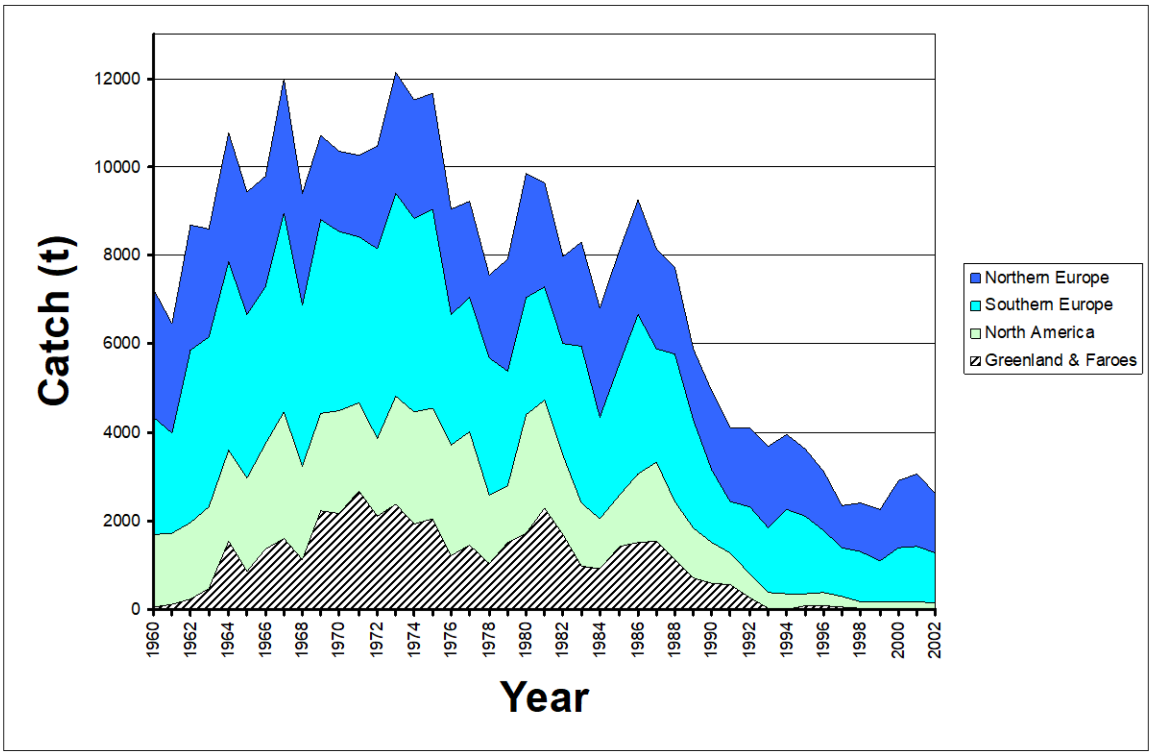


Figure 4.1.1.1 Nominal catch of salmon (tonnes round fresh weight) in four North Atlantic regions, 1960-2002

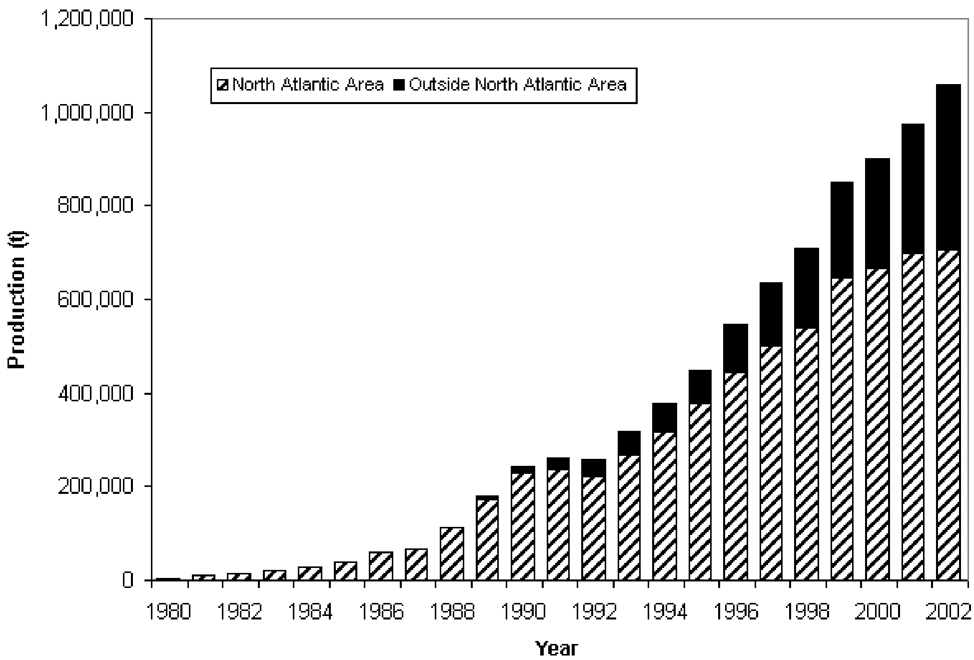


Figure 4.1.4.1 World-wide production of farmed Atlantic salmon.

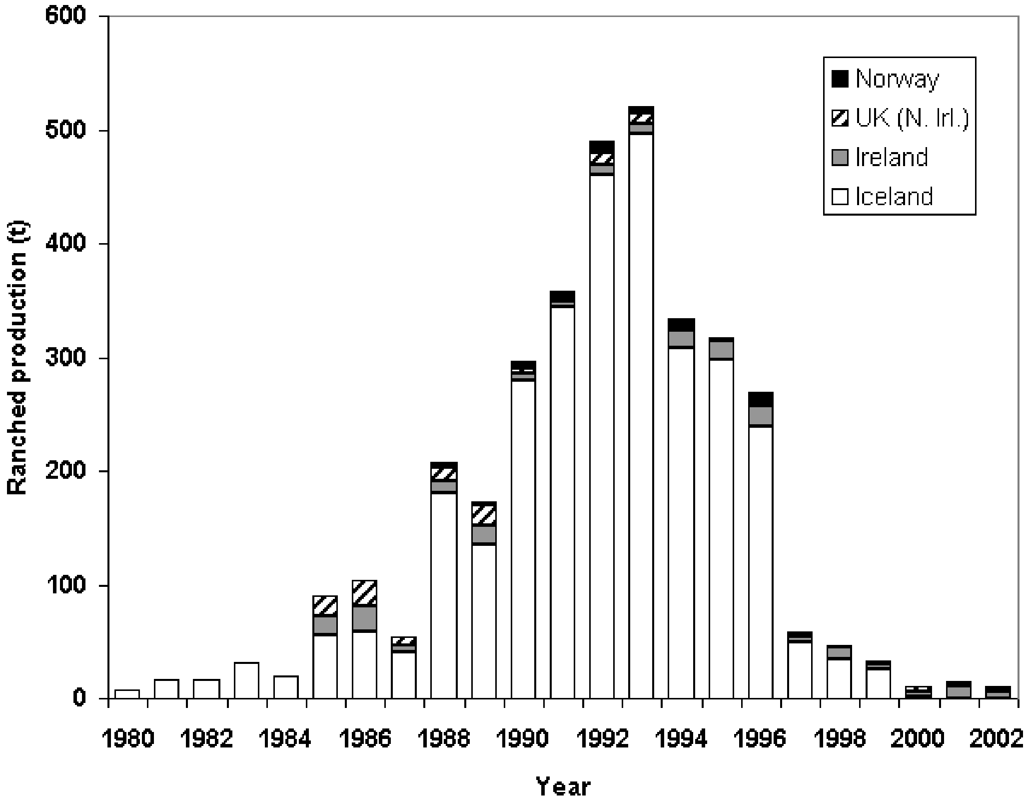


Figure 4.1.4.2 Production of ranched salmon in the North Atlantic, 1980-2002

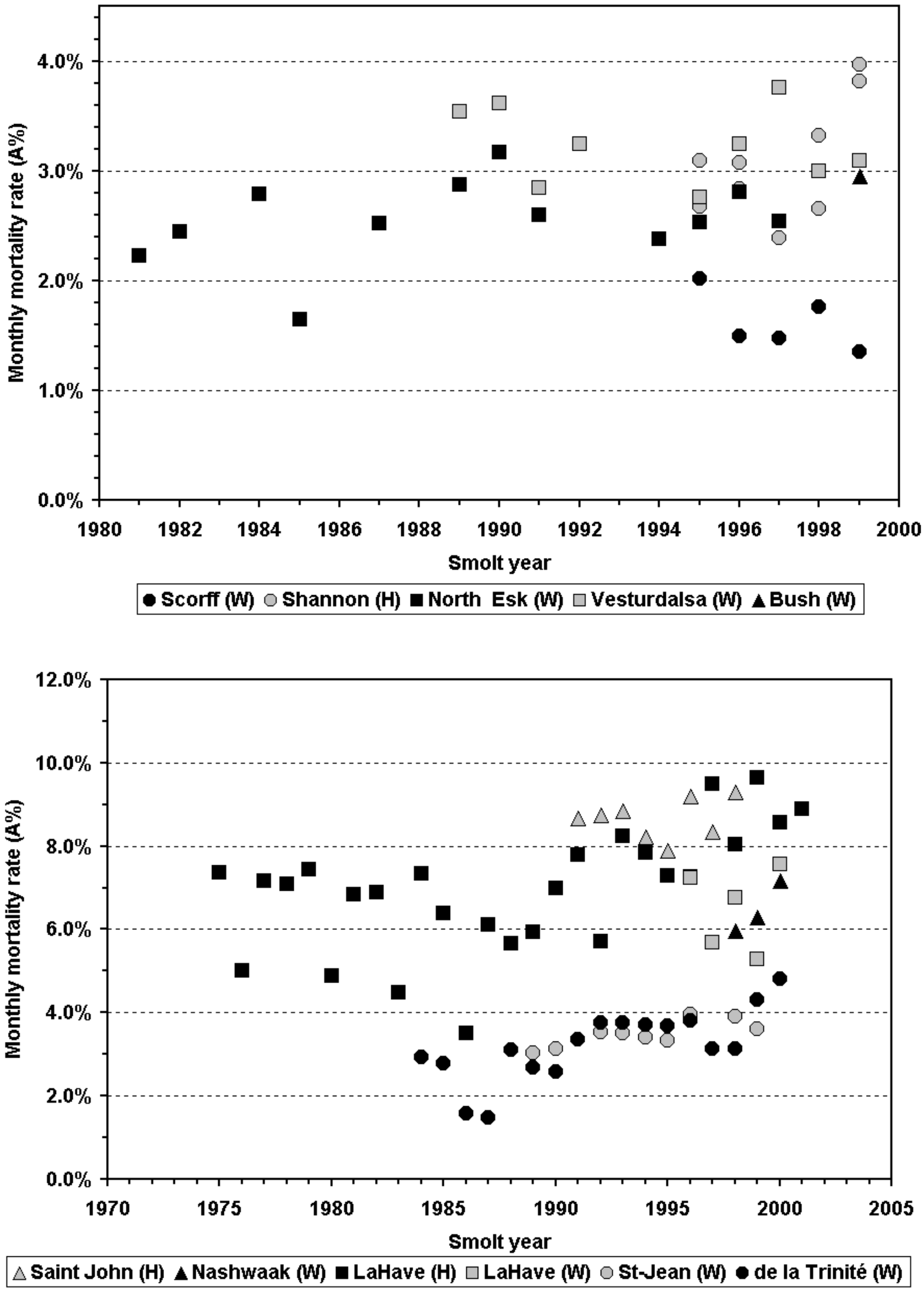


Figure 4.2.1.1. Monthly mortality (A%) estimates in the second year at sea derived from the inverse-weight model assuming a linear growth function for NEAC stocks (upper panel) and for NAC stocks (lower panel).

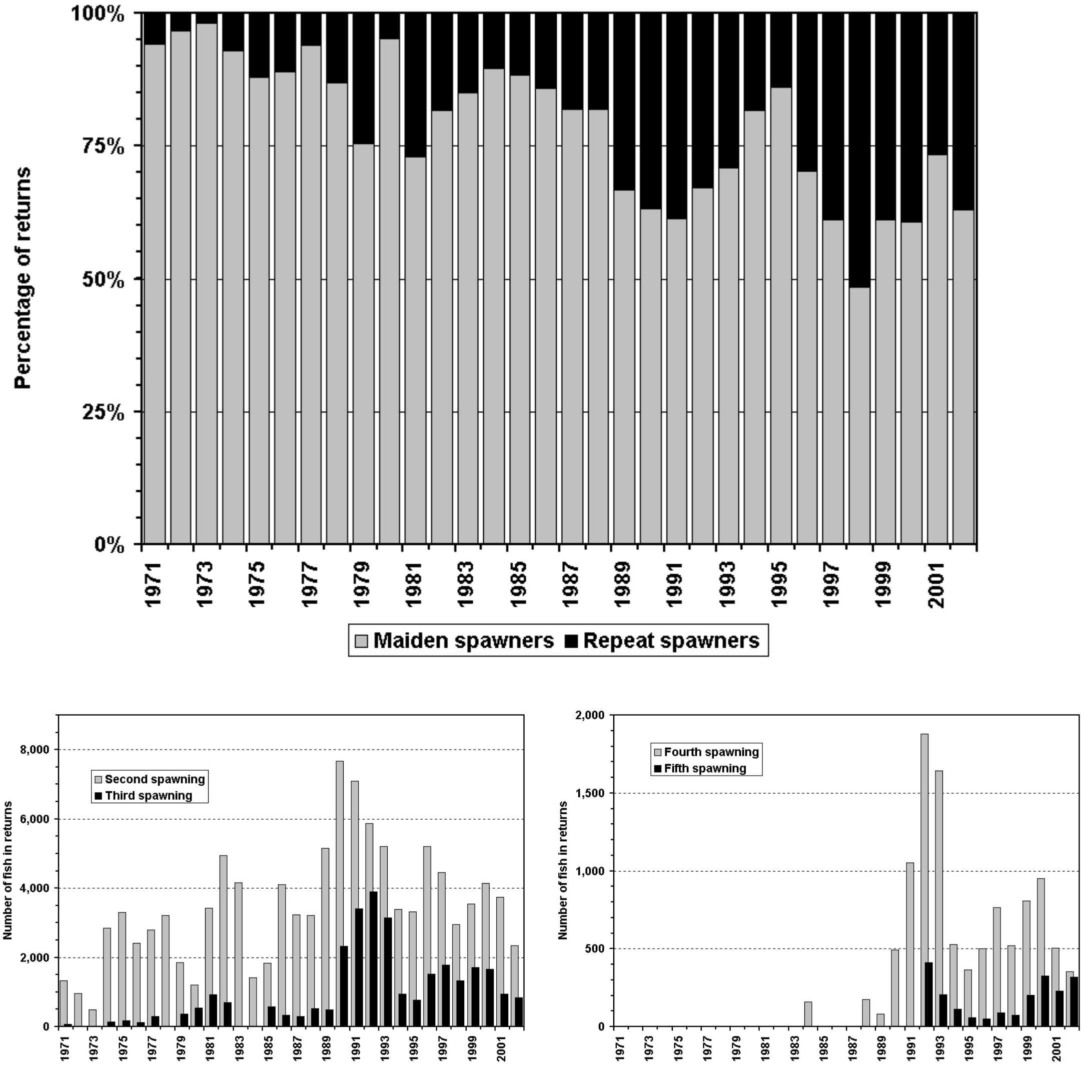


Figure 4.3.3.1. Relative abundance of maiden and repeat spawning large salmon (upper panel) and estimates of absolute abundance (lower abundance) of repeat spawning large salmon by spawning history returning to the Miramichi River, 1971 to 2002.

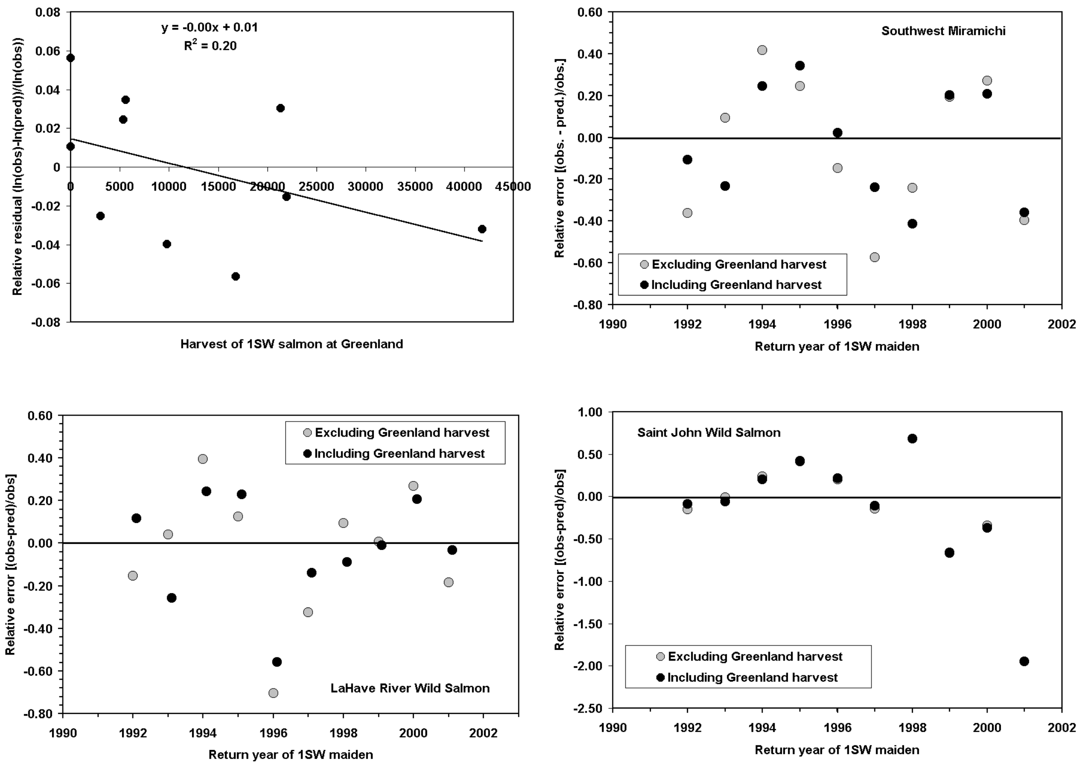


Figure 4.3.3.2. Linear association between residuals from the 1SW/2SW association and harvest of 1SW salmon at Greenland for Southwest Miramichi (upper left panel) and relative error [(obs. – pred.) / obs.] of predicted 2SW return when Greenland harvest of North American 1SW salmon is excluded or included in the 1SW/2SW association for the Southwest Miramichi (upper right panel), LaHave River wild salmon (lower left panel) and Saint John wild salmon (lower right panel).

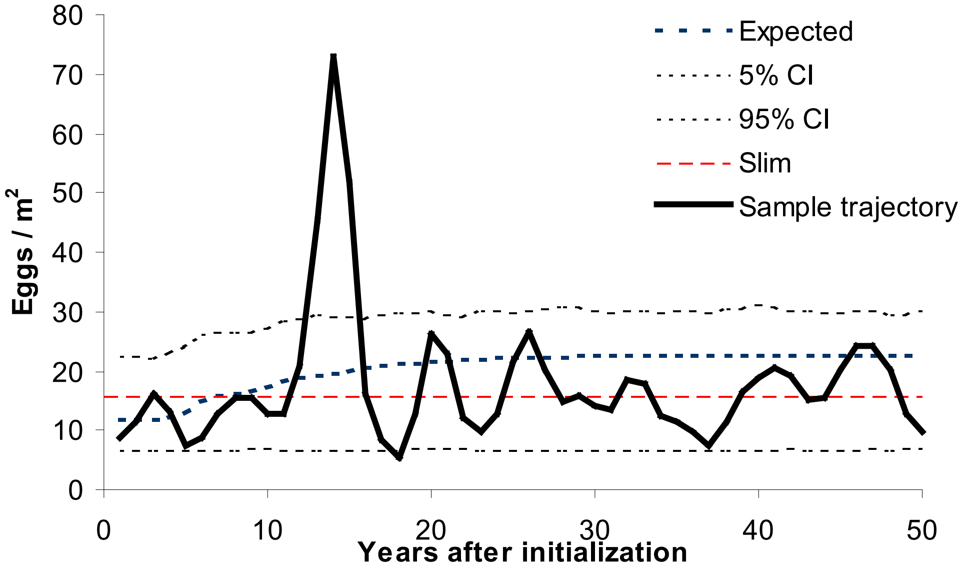


Figure 4.4.1.1. Typical single run trajectory and 90% range of 10,000 simulations of an expected stock and recruitment curve in relation to its conservation requirement S_{lim}.

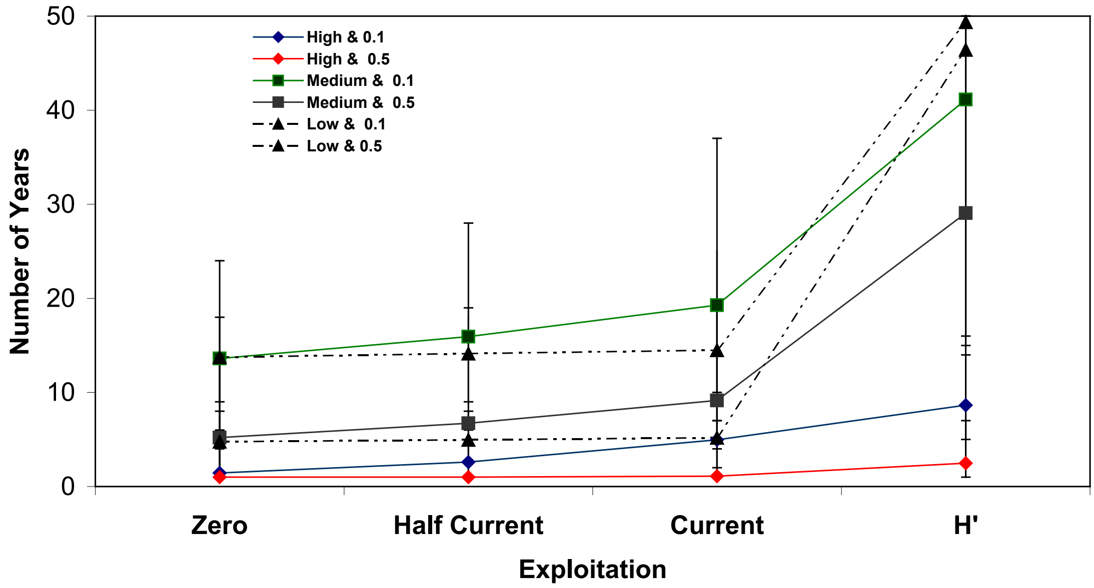


Figure 4.4.1.2. Number of years to attain S_{lim} in 50 years for High (14.93), Medium (2.13) and Low (1.85) alpha values in a Ricker stock and recruitment function over 10,000 simulations with uncertain parameters.

ANNEX 11

Council

CNL(03)10

Catch Statistics - Returns by the Parties

CNL(03)10

Catch Statistics - Returns by the Parties

1. The Official Catch Statistics, as submitted by the Parties, are tabulated overleaf (Table 1). The figures for 2002 are provisional. These catch statistics, which have been rounded to the nearest tonne, will be used to calculate the contributions to NASCO for 2004 and the adjustment to the 2003 contributions (in the light of the confirmed 2001 catches) unless the Secretary is advised otherwise.

2. Under Article 12 of the Convention, the Secretary shall compile and disseminate statistics and reports concerning the salmon stocks subject to the Convention. Table 2 presents catch statistics for the period 1960-2002 by Party to the NASCO Convention.

3. Tables 1 and 2 are set out in the format for the presentation of catch statistics which was agreed by the Council at its Fifth Annual Meeting. A further, more detailed, record of catch statistics during the period 1960-2002 is provided, for information only, in paper CNL(03)11.

4. For the 2002 catch data, the discrepancy in the combined statistics for the North Atlantic region provided to NASCO by the Contracting Parties (2,621 tonnes) and those provided by ICES (2,625 tonnes) is 4 tonnes, and is due to the inclusion of the catch at St Pierre and Miquelon in the ICES data. For some Parties there are a number of minor discrepancies in the catch statistics held by NASCO and those in the ICES report in a number of years since 1986 when the Parties began providing official statistics to NASCO. As previously requested by the Council, we will continue to explore the reasons for these discrepancies, in consultation with the Parties.

5. The total provisional catch for the North Atlantic region in 2002 is approximately 15% lower than the catch in 2001 and the fourth-lowest catch in the period of record since 1960. Catches do not necessarily reflect abundance, a report on the status of the stocks in 2002 is contained in the ACFM report from ICES (document CNL(03)8).

Secretary
Edinburgh
2 May, 2003

Table 1: Official Catch Statistics

	Provisional 2002 Catch (Tonnes)	Provisional 2002 Catch according to Sea Age						Confirmed 2001 Catch (Tonnes)
		1SW		MSW		Total		
		No	Wt	No	Wt	No	Wt	
Canada *	148	53,832	99	8,401	49	62,233	148	148
Denmark (in respect of Faroe Islands and Greenland)	9	-	-	-	-	-	-	42
Faroe Islands	0	-	-	-	-	-	-	0
Greenland	9	-	-	-	-	-	-	42
European Union**	1,235	-	-	-	-	-	-	1,407
Iceland	92	-	-	-	-	-	-	88
Norway	1,019	127,039	249.4	131,068	769.8	258,107	1,019.2	1,267
Russian Federation	118	24,588	60.5	10,484	57.7	35,072	118.2	114
United States of America	0	-	-	-	-	-	-	0

* The breakdown of the Canadian catch is into the categories small (shown under 1SW) and large (shown under MSW) salmon.
** Breakdown of the catch by number and weight according to sea age is available for some EU Member States.

Table 2: Catches of Atlantic Salmon by the Parties to the NASCO Convention

	Canada	Denmark (Faroe Islands and Greenland)	European Union	Finland	Iceland	Norway	Russian Federation	Sweden	USA
1960	1636	60	2641		100	1576	1100	40	1
1961	1583	127	2276		127	1456	790	27	1
1962	1719	244	3894		125	1838	710	45	1
1963	1861	466	3842		145	1697	480	23	1
1964	2069	1539	4242		135	2040	590	36	1
1965	2116	861	3693		133	1900	590	40	1
1966	2369	1338	3549		106	1823	570	36	1
1967	2863	1600	4492		146	2058	883	25	1
1968	2111	1167	3623		162	1752	827	150	1
1969	2202	2350	4407		133	2083	360	76	1
1970	2323	2354	4069		195	1861	448	52	1
1971	1992	2511	3745		204	1847	417	35	1
1972	1759	2146	4261	32	250	1986	462	38	1
1973	2434	2402	4604	50	156	2126	772	73	3
1974	2539	1945	4432	76	225	1973	709	57	1
1975	2485	2086	4500	76	166	1754	811	56	2
1976	2506	1479	2931	66	225	1530	542	45	1
1977	2545	1652	3025	59	130	1488	497	10	2
1978	1545	1159	3102	37	291	1050	476	10	4
1979	1287	1694	2572	26	225	1831	455	12	3
1980	2680	2052	2640	34	249	1830	664	17	6
1981	2437	2602	2557	44	163	1656	463	26	6
1982	1798	2350	2533	83	147	1348	364	25	6
1983	1424	1433	3532	79	198	1550	507	28	1
1984	1112	997	2308	75	159	1623	593	40	2
1985	1133	1430	3002	49	217	1561	659	45	2
1986	1559	1490	3524	38	330	1597	608	53	2
1987	1784	1539	2593	49	250	1385	559	47	1
1988	1311	1136	2833	34	412	1076	419	40	1
1989	1139	701	2450	52	277	905	359	29	2
1990	912	542	1645	59	426	930	316	33	2
1991	711	533	1139	69	505	877	215	38	1
1992	520	260	1506	77	636	867	166	49	1
1993	373	35	1483	70	656	923	140	56	1
1994	355	18	1919	48	448	996	141	44	0
1995	259	86	1852	-	439	839	130	-	0
1996	290	92	1474	-	358	787	131	-	0
1997	229	59	1179	-	154	630	111	-	0
1998	157	17	1183	-	164	740	130	-	0
1999	152	19	1016	-	147	811	102	-	0
2000	153	29	1336	-	85	1176	124	-	0
2001	148	42	1407	-	88	1267	114	-	0
2002	148	9	1235	-	92	1019	118	-	0

NOTES:

1. The European Union catch from 1995 includes the catches by Finland and Sweden.
2. The catch for Denmark (in respect of the Faroe Islands and Greenland) includes the catch for Greenland when it was a member of the European Union and the catches up to 1983 by Denmark.
3. Figures from 1986 are the official catch returns to NASCO. Figures to 1986 are based on data contained in the ICES Working Group Reports.
4. The Faroese fishery was subject to compensation arrangements in the period 1991-1998. The West Greenland fishery was subject to compensation agreements in 1993, 1994 and 2002.

ANNEX 12

CNL(03)12

Request for Scientific Advice from ICES

1. With respect to Atlantic salmon in the North Atlantic area:

   1.1 provide an overview of salmon catches and landings, including unreported catches by country and catch and release, and worldwide production of farmed and ranched Atlantic salmon in 2003;
   1.2 report on significant developments which might assist NASCO with the management of salmon stocks;
   1.3 provide a compilation of tag releases by country in 2003;
   1.4 identify relevant data deficiencies, monitoring needs and research requirements taking into account NASCO's International Atlantic Salmon Research Board's inventory of on-going research relating to salmon mortality in the sea.

2. With respect to Atlantic salmon in the North-East Atlantic Commission area:

   2.1 describe the key events of the 2003 fisheries and the status of the stocks; [1]
   2.2 evaluate the extent to which the objectives of any significant management measures introduced in recent years have been achieved;
   2.3 further develop the age-specific stock conservation limits where possible based upon individual river stocks;
   2.4 provide catch options or alternative management advice, if possible based on forecasts of PFA for northern and southern stocks, with an assessment of risks relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding; [3]
   2.5 provide estimates of by-catch of salmon in pelagic fisheries and advise on their reliability.

3. With respect to Atlantic salmon in the North American Commission area:

   3.1 describe the key events of the 2003 fisheries and the status of the stocks; [1]
   3.2 evaluate the extent to which the objectives of any significant management measures introduced in recent years have been achieved;
   3.3 update age-specific stock conservation limits based on new information as available;
   3.4 provide catch options or alternative management advice with an assessment of risks relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding; [3]
   3.5 provide an analysis of any new biological and/or tag return data to identify the origin and biological characteristics of Atlantic salmon caught at St Pierre and Miquelon;
   3.6 provide descriptions (gear type; and fishing depth, location and season) for all pelagic fisheries that may catch Atlantic salmon.

4. With respect to Atlantic salmon in the West Greenland Commission area:

   4.1 describe the events of the 2003 fisheries and the status of the stocks; [1, 2]
   4.2 evaluate the extent to which the objectives of any significant management measures introduced in recent years have been achieved;
   4.3 provide information on the origin of Atlantic salmon caught at West Greenland at a finer resolution than continent of origin (river stocks, country or stock complexes);
   4.4 provide catch options or alternative management advice with an assessment of risk relative to the objective of exceeding stock conservation limits and advise on the implications of these options for stock rebuilding. [3]

Notes:

1. *In the responses to questions 2.1, 3.1 and 4.1 ICES is asked to provide details of catch, gear, effort, composition and origin of the catch and rates of exploitation. For homewater fisheries, the information provided should indicate the location of the catch in the following categories: in-river; estuarine; and coastal. Any new information on non-catch fishing mortality, of the salmon gear used, and on the by-catch of other species in salmon gear, and of salmon in any existing and new fisheries for other species is also requested.*

2. *In response to question 4.1, ICES is requested to provide a brief summary of the status of North American and North-East Atlantic salmon stocks. The detailed information on the status of these stocks should be provided in response to questions 2.1 and 3.1.*

3. *In response to questions 2.4, 3.4 and 4.4 provide a detailed explanation and critical examination of any changes to the models used to provide catch advice. With respect to stock rebuilding, consider and evaluate various alternative baseline measures for use in risk analysis.*

ANNEX 13

Council

CNL(03)13

Returns under Articles 14 and 15 of the Convention

CNL(03)13

Returns under Articles 14 and 15 of the Convention

Summary

1. The request for the return of information required under the NASCO Convention and relevant to the period 1 January - 31 December 2002 was circulated on 6 January 2003. All Parties were requested to make a return even if there had been no changes since the last notification. Details of the new actions taken under Articles 14 and 15 of the Convention are attached. At the time of preparation of this paper, some EU Member States which have salmon interests (Denmark, France and Spain) have not sent returns.

2. Under Article 14 of the Convention, Canada and the USA have reported on their discussions with France concerning a sampling programme at St Pierre and Miquelon in 2003 in accordance with the Resolution Concerning Cooperation with St Pierre and Miquelon adopted by the Council at its Nineteenth Annual Meeting. Norway has reported on its surveillance activities which (together with the surveillance activities of the Icelandic coastguard) are very valuable in identifying fishing for salmon in international waters in the North-East Atlantic Commission area by non-Contracting Parties.

3. Under Article 15, a number of new laws, regulations and programmes and other new commitments have been reported. In summary these include:

   In Canada, a Recovery Team has been formed and a Recovery Strategy developed in preparation for listing of the Inner Bay of Fundy Atlantic salmon stocks as endangered under the Species at Risk Act which is being promulgated in 2003. The strategy includes gene banking, ongoing monitoring of rivers, research into marine mortality, and habitat protection activities. Some elements of the strategy are already in the implementation phase.

   In Greenland, an Executive Order suspending commercial landings, but allowing continuation of a subsistence fishery, was implemented. Greenland has also reported on the sampling programme for the fishery in 2002.

   European Union:

   In Ireland, the carcass tagging and logbook scheme introduced in 2001 was continued in 2002. A TAC applied to the commercial fishery in 2002 so as to limit the catch and a limit of one salmon per day up to 1 June was introduced for the rod fishery to protect spring salmon. The ban on the sale of rod-caught fish introduced in 2001 was continued in 2002.

   In Sweden, there have been changes to protected areas outside salmon rivers and for 2003 there will be an increase in the close season for salmon fishing in rivers by one month. *Gyrodactylus salaris* was made a notifiable disease in 2002 and monitoring on rivers and at hatcheries where the parasite has not been recorded is being undertaken.

In the United Kingdom, a number of net limitation orders have been introduced in England and Wales; in Northern Ireland, byelaws restricting angling to catch and release from the start of the season to 31 May, setting a two-fish bag limit from 1 June for the rest of the season, and limiting the number of commercial salmon licences that can be issued have been introduced; and in Scotland, regulations requiring reporting of fish farm escapes and prohibiting the sale of rod-caught salmon have been introduced. There have been compensation arrangements for commercial fisheries in England and Wales and Northern Ireland, and set-aside of a net fishery in Ireland. In Scotland, catch and release fishing has continued to increase.

Iceland has provided information on by-catch of adult Atlantic salmon in pelagic trawls for herring in 2002.

In Norway, there have been reductions in the fishing season in one county. The liming programme has continued, with 21 rivers limed at a cost of approximately £4 million. The parasite *Gyrodactylus salaris* has spread to two new rivers, taking the total to 44, but eradication measures have reduced the occurrence of the parasite. A new action plan for treatment was developed in 2002. A total of 26 rivers has been treated with rotenone and in 15 of these the parasite has been eradicated. Improvements to treatment methods have increased the probability of successfully eradicating the parasite from treated rivers.

In the USA, a draft recovery plan is being developed for the populations of Atlantic salmon listed as endangered. Formal review of the plan is expected to begin in 2003. All projects carried out in salmon watersheds are now subject to review in order to avoid or minimise impacts to Atlantic salmon and their habitat.

Secretary
Edinburgh
2 May, 2003

Returns under Article 14 of the Convention

1. Actions Taken To Make Effective The Provisions Of The Convention *(Article 14, Paragraph 1)*

1.1 The prohibition of fishing for salmon beyond 12* nautical miles from the baselines from which the breadth of the territorial sea is measured. *(Article 2, paragraph 2)*

* 40 nautical miles at West Greenland
* Area of fisheries jurisdiction of the Faroe Islands

Norway

Information on sightings is reported directly to NASCO by the Norwegian Coast Guard Squadron North.

Other Parties

No actions reported by the other Parties.

1.2 Inviting the attention of States not party to the Convention to any matter relating to the activities of the vessels of that State which appears to affect adversely the salmon stocks subject to the Convention. *(Article 2, paragraph 3)*

Canada

In 2002, Canada continued discussions on a bilateral basis with France concerning the interceptory salmon fishery at St Pierre and Miquelon. With regard to independent sampling of the catch from this fishery by scientists from Canada or the United States, France has indicated that their own scientists would handle any sampling. Such sampling would provide an indication of the area of origin of the salmon caught.

USA

In 2002, the US has continued its efforts to establish a sampling programme in St Pierre and Miquelon. It is not certain at this time whether a programme will be established for the 2003 Atlantic salmon catch.

Other Parties

No actions reported by the other Parties.

1.3 Measures to minimise the by-catches of salmon originating in the rivers of the other member. *(Article 7, paragraph 2)* [North American Commission members only]

No actions reported by either Party.

1.4 Alteration in fishing patterns in a manner which results in the initiation of fishing or increase in catches of salmon originating in the rivers of another Party, except with the consent of the latter. ***(Article 7, paragraph 3)*** **[North American Commission members only]**

No actions reported by either Party.

2. Actions Taken To Implement Regulatory Measures Under Article 13 *(Article 14, Paragraph 1)*

No actions reported by any Party.

Returns under Article 15 of the Convention

1. Laws, Regulations And Programmes Adopted Or Repealed Since The Last Notification *(Article 15, Paragraph 5(a))*

Denmark (Faroe Islands and Greenland)

Greenland

The Greenland Home Rule Executive Order No. 21 of 10. August 2002 on Salmon Fishing implemented the new measures in 2002 comprising, on the one hand, a suspension by the Organisation for Fishermen and Hunters in Greenland (KNAPK) of the commercial landings to fishing plants, while on the other hand allowing for the continuation of a subsistence fishery for Atlantic salmon in Greenland.

The background is as follows: At the Annual Meeting of NASCO in June 2002 the West Greenland Commission agreed an A*d hoc* Management Programme for the 2002 Fishery at West Greenland (WGC(02)13). In accordance with the 2002 *Ad hoc* Management Programme the quotas available would have been between 20-55 tonnes of commercial landings to fishing plants during up to two harvest periods, depending on the observed commercial CPUE during the first harvest period. Shortly before the opening date of the 2002 fishing season, the Organisation for Fishermen and Hunters in Greenland (KNAPK) and the North Atlantic Salmon Fund (NASF) came to an agreement to suspend all commercial fishing for Atlantic salmon with the purpose of supplying fishing plants, factories, shops, grocers, smokehouses and marketing associations or exporting the catch. Accordingly, the Greenland Home Rule Government decided to set the national quota for commercial landings to fishing plants of Atlantic salmon to 0 tonnes for 2002, and it continued to prohibit export of Atlantic salmon from Greenland in 2002. However, it still allowed a fishery for local sales to the open markets, hospitals, restaurants, etc. and allowed a fishery for home consumption. This subsistence fishery of Atlantic salmon was opened on Monday 12 August 2002, and the fishing season was open until the end of the year 2002.

European Union

Ireland

Statutory Instrument (SI No. 256 of 2000) was updated for the 2002 fishing season (SI No. 215 of 2002) so as to continue the Carcass Tagging and Logbook Scheme for 2002. Under this instrument all salmon fishermen (commercial and recreational) must apply a coded carcass tag to each salmon caught and provide details of these landings and subsequent disposal (sale, storage, etc.) in official logbooks. The scheme was introduced in 2001. The carcass tagging and logbook scheme aims to provide a means of collecting accurate nominal catch statistics and to develop best management strategies. By-law 781 of 2001 established for 2002 a limit of one salmon per day up to 1st June to protect spring (MSW) fish. A national aggregated TAC of 219,649 salmon was included in the regulations in 2002, and applied to the commercial salmon fishery in 2002 to limit the catch in this sector. There has been a ban on the sale of rod-caught fish in 2001 and 2002.

Sweden

New regulations regarding the salmon fishery were implemented in 2002. Fifteen new protected areas were established outside small sea trout rivers (FIFS 2002:6). In addition a number of existing protected areas outside individual salmon rivers were merged into larger units. For some of these larger protected areas, greater responsibility was given to the county administrations to provide for the establishment of a trap net fishery and net fishery in other parts of the areas. The boundaries of a protected area in Kungsbackafjorden were also changed to agree with boundaries of Natura 2000 areas and angling and net fishing were allowed in the outer parts of the protected area (FIFS 2002:34). Towards the end of 2002 decisions were taken to close the salmon fishery in rivers in the period from 1 October to 31 March (previously 1 October to end of February) (FIFS 2002:48). This regulation will be implemented from 1 January 2003.

United Kingdom

In England and Wales: River Taw/Torridge (SW Region) – renewal of Net Limitation Order (NLO) to reduce the number of seine net licences issued from 14 to zero as fishermen leave the fishery.

River Teign (SW Region) – renewal of Net Limitation Order (NLO) to limit number of net licences to six.

North-East coast (NE Region) – renewal of Net Limitation Order to reduce the number of drift net licences issued from 69 to zero as fishermen leave the fishery.

*In Northern Ireland***:** New bye-laws, the Fisheries (Amendment) Bye-Laws (Northern Ireland) 2002, came into operation in the Fisheries Conservancy Board (FCB) area on 1 March 2002. These restrict angling for salmon to "catch and release" from the start of the angling season to 31 May and introduce a two-fish bag limit from 1 June for the rest of the season. These bye-laws give legal status to the voluntary arrangement which was introduced in the 2001 fishing season. Further FCB Byelaws were introduced to limit the number of commercial salmon fishing licences that can be issued, in support of the voluntary commercial nets buy-out scheme (see section 2 below).

In Scotland: The River Dee (Kirkcudbright) Salmon Fishery District (Baits and Lures) Regulations 2002 came into force on 1 February 2002. They prohibit the use of shrimps and prawns as bait when fishing for salmon in the Dee (Kirkcudbright) Salmon Fishery District.

The Mull Salmon Fishery District Designation (Scotland) Order 2002 came into force on 20 March 2002. The Order created a Salmon Fishery District extending over the whole of the Isle of Mull. The districts in force prior to this Order were abolished, having been superseded by the new district.

The Registration of Fish Farming and Shellfish Farming Businesses Amendment (Scotland) Order 2002 came into force 10 May 2002. This order provides for the notification of circumstances giving rise to any escapes of fish, or of circumstances that gave rise to a significant risk of escape from fish farms registered under the principal Order (1985 Order).

The Conservation of Salmon (Prohibition of Sale) (Scotland) Regulations 2002 came into force on 1 October 2002. They prohibit the sale, offer or exposure for sale in Scotland of any salmon caught by rod and line.

Norway

The fishing season has been reduced from 5 to 3 weeks in the county of Hordaland.

Other Parties

No changes reported by the other Parties, the other EU Member States or the Faroe Islands.

2. Other New Commitments Relating To The Conservation, Restoration, Enhancement And Rational Management Of Salmon Stocks Subject To The Convention *(Article 15, paragraph 5(b))*

Canada

Canada's Species at Risk Act is expected to be promulgated in June 2003. In preparation for the listing under the Act of the Inner Bay of Fundy Atlantic salmon stocks as endangered, a Recovery Team has been formed and a Recovery Strategy has been developed in 2002. This Strategy includes gene banking, ongoing monitoring of inner Bay of Fundy rivers, at-sea mortality research, habitat protection activities, regulatory and enforcement plans, and community education. Some elements of the Recovery Strategy are already in the implementation phase.

Denmark (Faroe Islands and Greenland)

Greenland

At the Annual Meeting of NASCO in June 2002 a Sampling Agreement for the West Greenland fishery in 2002 was agreed, (WGC(02)14). This Agreement details the cooperative contributions of the Parties of the West Greenland Commission to the process of collecting biological data on Atlantic salmon harvested at West Greenland in 2002. In accordance with the programme, sampling teams from Greenland, the United Kingdom, Ireland, the United States and Canada sampled 44% by number (1,374 salmon) of the landings for fork length and weight, and samples of scales and tissue for DNA analysis were collected and the presence of tags checked. Sampling commenced at the start of the fishery and continued until the end of September, although landings continued until December. There were some practical problems because of the nature of the fishery (subsistence fishery only) but the catch was adequately sampled both spatially and temporally.

European Union

Ireland

A draft net fishery on the Cork Blackwater has been set aside by local arrangement. In the Kerry District, South-West Region, a local arrangement will reduce the commercial catch by 3,000 fish.

Sweden

The salmon parasite *Gyrodactylus salaris* became a notifiable disease in Sweden in 2002, but there is no country-wide monitoring programme for the parasite. The monitoring is limited to a programme covering wild salmon populations and hatcheries at all west-coast salmon rivers where the parasite has not been found.

United Kingdom

In England and Wales: Netsmen have received compensation payments (from various sources) not to fish for all or part of the season (or to release fish alive) in the following salmon fisheries: Tavy, Tamar, Lynher, Fowey, Camel, Usk, Severn, Avon and Stour, and Cumbrian coastal fisheries. A number of mixed-stock fisheries continue to be phased out. In the largest of these, the North-East coast fishery, the number of drift net licences has now fallen to 69, a 51% reduction since the phase-out began in 1993. The phase-out of the Taw/Torridge fishery (noted in Section 1) was accelerated by a compensation scheme, with 11 of the 14 nets being bought out with immediate effect prior to the 2002 season.

In England: the UK Government announced in 2000 that it would be providing substantial funds, up to £750,000 subject to matching funds from interested parties, to launch compensation arrangements designed to accelerate the phase-out of mixed-stock salmon net fisheries on a voluntary basis, with particular emphasis on the North-East coast fishery. Negotiations have continued through 2002, and additional Government funds were identified to facilitate this process. At the current time, it appears that agreement has been reached, in principle, with the majority of the netsmen (~70-80%) to surrender their licences in return for agreed compensation payments. Subject to ratification, it is hoped that this will be effective immediately, thus representing a very substantial reduction in effort in this fishery prior to the start of the 2003 season.

In Northern Ireland: a Commercial Salmon Netsmen Voluntary Buy-out Scheme was introduced in 2002 in the FCB area of jurisdiction. A total of 36 fixed salmon nets (bag and draft), 10 drift nets, 6 tidal draft nets and 4 salmon boxes are eligible for licences in the FCB area. In 2002, 15 fixed nets, 5 drift nets, 4 tidal draft nets and 4 salmon boxes were bought out. The 10-year average catch of these nets was 5,000 salmon and significant numbers of sea trout. The Foyle area continues to operate a "real time" management of the salmon stock system which effectively means that exploitation of the returning adult fish can be reduced if the numbers of fish reaching the spawning tributaries is insufficient. Work has continued on the implementation of the Salmon Management Plan in the FCB area, which is also a catchment-based approach to salmon management, involving the setting of spawning/conservation targets at catchment level consistent with the Precautionary Approach as adopted by NASCO. Funding is available for an Angling Development Programme under the EU Peace II Programme which includes assistance for in-river habitat improvements.

In Scotland: the voluntary practice of catch and release in the rod fishery continued to increase, rising from 38% in 2001, to an estimated 41% in 2002. Salmon netsmen repeated their voluntary deferment of the start of the netting season by 6 weeks to conserve early-running stocks. District Salmon Fishery Boards and Fisheries Trusts throughout Scotland have maintained programmes of stock and habitat enhancement.

Norway

Liming

In 2002, 21 Atlantic salmon rivers were limed in Norway at a cost of NOK 45 million (approximately £4 million). Most liming projects commenced during the period 1991 to 1997. It will take some years before these salmon stocks are re-established. The largest liming projects are in three large watercourses in southern-most Norway: Tovdalselva, Mandalselva and Bjerkreimselva. In Tovdalselva and Mandalselva, the natural Atlantic salmon stocks are extinct due to acidification. Before acidification, during the late 1800s, yearly catches of salmon in the rivers Mandalselva and Tovdalselva were as high as 30 and 20 tonnes respectively. In both rivers a restocking program is being carried out in connection with the liming programme. The catches are increasing in the river Mandalselva with an average catch of about 10 tonnes in the last three years. In the river Tovdalselva a high density of young fish was recorded in 2002 and the catches are expected to increase from 2004 onwards. Bjerkreimselva had a small population of its natural salmon stock before liming, and catches increased significantly in the first couple of years after liming started. The average catch in the river Bjerkreimselva for the last three years has been about 13 tonnes. In 2002 liming commenced in one new river, the river Uskedal, which is a small river in the County of Hordaland.

Gyrodactylus salaris

The salmon parasite *Gyrodactylus salaris* has spread to two new rivers in 2002. The infected rivers are situated not far from the river Vefsna, which is the largest infected river in the northern part of Norway. The total number of infected rivers has thus increased to 44. Eradication measures have, however, reduced the occurrence of the parasite.

In 2002 a new action plan was drawn up. The main features of this plan include preventive measures, construction of barriers to migration and chemical treatment of infected rivers. The action plan also includes a cost benefit analysis. In accordance with the action plan, three infected rivers were treated with rotenone in 2002. The treated rivers are situated in the inner part of the Trondheimsfjord, which is the best area for Atlantic salmon in Norway (43 rivers drain into this fjord). A total of 26 of the 44 infected watercourses in Norway have been treated with rotenone. In 15 of the treated watercourses, the parasite has been eradicated. Five rivers are still being monitored. In six rivers the parasite has been recorded again following rotenone treatment. For the last couple of years, considerable efforts have been made to improve the methods used for rotenone treatment of rivers. The methodological improvements have increased the probability of successfully eradicating the parasite. In addition to the remedial measures, the monitoring programme and preventive measures are given high priority.

Gene-bank and milt-bank

By the end of 2001, milt from a total of 6,500 wild salmon from 173 stocks had been included in the Norwegian Gene Bank to provide an opportunity to protect stocks from extinction. No new milt samples were included in the gene bank in 2002. Norway currently operates 3 living gene banks; one in northern Norway, one in mid-Norway and one in south-western Norway. 31 characteristic and valuable stocks have been included in the "living gene banks".

International research programmes

Cooperation between Norway and Russia on environmental issues, on research and management of Atlantic salmon has continued, especially concerning the Pechora River.

USA

As reported last year, the US Fish and Wildlife Service and NOAA Fisheries are working with the Maine Atlantic Salmon Commission to develop a draft recovery plan for the populations of Atlantic salmon that have been listed as endangered. The draft is expected to begin formal review during the summer of 2003.

Following the listing of Atlantic salmon, the US Fish and Wildlife Service and NOAA Fisheries have been consulting with other federal agencies to review all projects carried out in the salmon watersheds in order to avoid or minimize impacts to Atlantic salmon and their habitat. Consultations have been conducted on the permitting process for discharge from aquaculture facilities, dredging projects, and bridge and road repair.

Other Parties

No new commitments reported by the other Parties, the other EU Member States or the Faroe Islands.

3. Other Factors Which May Significantly Affect The Abundance Of Salmon Stocks Subject To The Convention *(Article 15, Paragraph 5(c))*

Iceland

Catches of adult salmon in pelagic trawls were reported in late 2002 (see document CNL(03)27).

Other Parties

No factors reported by the other Parties.

ANNEX 14

Council

CNL(03)14

Report on Progress with Application of the Decision Structure for Management of North Atlantic Salmon Fisheries

CNL(03)14

Report on Progress with Application of the Decision Structure for Management of North Atlantic Salmon Fisheries

Summary

1. In response to concern about the status of Atlantic salmon stocks, NASCO and its Contracting Parties agreed to adopt and apply a Precautionary Approach to the conservation, management and exploitation of salmon in order to protect the resource and preserve the environments in which it lives.

2. To assist NASCO and the relevant authorities in applying the Precautionary Approach to the management of North Atlantic salmon fisheries, a Decision Structure was adopted on a provisional basis in 2000. After further development and evaluation, a revised Decision Structure was adopted by the Council in 2002 in order to provide a basis for more consistent approaches to the management of exploitation of salmon throughout the North Atlantic region. Application of this Decision Structure by the Parties is intended to assist in safeguarding the abundance and diversity of the resource. It is the Council's request that the Decision Structure be widely applied, without delay, by managers in cooperation with stakeholders on salmon rivers.

3. In order to facilitate annual reporting by the Parties on the extent of implementation of the Decision Structure and their experiences on its application, the Council asked the Secretary to develop a simple format for reporting. This format was used on a trial basis for the 2003 returns. The Council is asked to consider if the reporting format is acceptable or if it wishes to make amendments for subsequent years' returns. The information provided by the Parties is attached. At the time of preparation of this report, no return of information was available for Canada, the Faroe Islands and some EU Member States, (Denmark, France and Spain) with salmon interests.

Implementation

4. Progress in implementing the Decision Structure has been reported by the European Union (Ireland and the UK), Norway and Russia. There are no fisheries for Atlantic salmon in the US. In Ireland, consistent with the Decision Structure, conservation limits have been established for each of the 17 salmon fishing districts and catch advice since 2001 has been provided on the basis of the estimated number of returning salmon and the conservation limit requirement. In England and Wales, the previous Decision Structure had been incorporated into Salmon Action Plans (for the Severn Estuary) during 2002 and the application of the new Decision Structure is being considered for future plans. In addition, methods are being developed to provide tools to assess the risks of failing to achieve conservation limits. In Scotland, the applicability of the Decision Structure to mixed and single stock fisheries has been investigated and the Decision Structure has been distributed to managers for their assessment. In Norway, the Decision Structure has been included in revised national guidelines for management of salmon fisheries which will apply to the five-year regulatory regime for salmon fisheries commencing in 2003. In Russia, the Decision Structure was applied to the management of salmon fisheries on the Umba River.

Monitoring

5. Attainment of conservation limits is assessed annually in Ireland and England and Wales. In addition, in England and Wales a detailed assessment of all fishery management measures is undertaken every five years for all principal salmon rivers. In Sweden, an index river is being established on the west coast. In Northern Ireland, microtagging of smolts in the Foyle area is being undertaken and genetic profiling is used to inform stocking methods. In Scotland, new models are being developed to assess the value of catch data to assess abundance and stock dynamics. In Norway, the salmon river categorization system has been revised and applied in a nationwide survey of salmon rivers. This information on stock status will be updated every year. In Russia, the effectiveness of management measures is evaluated on the basis of stock status.

Measures to increase abundance

6. Measures designed to increase abundance have been introduced in the European Union (Ireland, Sweden and the UK), Russia and the USA. A TAC for the commercial fishery in Ireland was applied; new fishery regulations were implemented in Sweden in response to low abundance; the phase-out of mixed-stock fisheries is continuing in England and Wales and reductions in the fishing season introduced; and in Scotland, catch and release fishing continues to be adopted more widely. In Russia, the Umba River commercial fishery has been closed and a programme of stock rebuilding initiated. In the USA, a river-specific hatchery programme and habitat protection and restoration programmes have been initiated. Research is ongoing into the factors contributing to low abundance and considerable effort is being directed to threat identification and abatement.

Amendments

7. Only one suggestion has been made so far for the further development of the Decision Structure. The EU (England and Wales) has referred to the fact that the Decision Structure does not address environmental matters influencing carrying capacity and survival.

8. **In short,** it is less than a year since the Decision Structure was adopted, but initial progress has been made by a number of Parties in its implementation, in monitoring effects of management measures and in introducing measures to address failures in abundance. On the basis of the returns, it seems likely that further progress in implementation can be expected over the next few years.

Secretary
Edinburgh
2 May, 2003

1. Have any new actions been taken to implement the Decision Structure for the management of salmon fisheries? If "yes" please provide details of these actions and a selection of case studies to illustrate its application.

European Union

Ireland

Consistent with the Decision Structure, Conservation Limits have been established for each of the 17 salmon fishing districts in Ireland and attainment of these CLs has been assessed since 2001. The carcass tagging and logbook scheme aims to provide a means of collecting accurate nominal catch statistics and to develop best management strategies. Accurate catch statistics are now available from the mandatory carcass tagging and logbook scheme. Since 2001, catch advice has been provided in relation to the estimated number of returning salmon and the Conservation Limit requirement. This gives guidance in the establishment of District TACs.

United Kingdom

England and Wales

Method development has continued to provide tools to assess the risks of Conservation Limit failure given different management scenarios. It is intended to trial these during 2003/04. Examination of the Decision Structure has indicated some areas for improvement. The old structure was incorporated into Salmon Action Plans during 2002 (Severn Estuary) and the application of the new version is being considered for future Plans.

Northern Ireland

Data are available for the first time in 2002 from fish counters on the Glendun, Maine and Blackwater rivers. Preliminary conservation limits have been set. Comprehensive fry surveys were conducted in 2002 for these catchments. The NASCO Decision Structure has been applied for the first time in the Foyle Area.

Scotland

Fisheries Research Services have investigated the applicability of the Decision Structure to both mixed stock and single stock fisheries. The Decision Structure has been circulated to District Salmon Fishery Boards, the local managers in Scotland, for their assessment of it as a tool in their management operations.

Norway

In preparation for a 5-year regulatory regime for the salmon fisheries (which takes effect in 2003) the Norwegian authorities have revised the national guidelines for management of salmon fisheries. The Decision Structure has been translated and included in the revised national guidelines. The category system for salmon rivers has also been revised and a new survey of the stocks has been carried out. This survey has provided much of the information needed to answer the questions in the Decision Structure. Progress on implementation will be reported in 2004.

Russian Federation

A Decision Structure was applied for the management of the salmon fisheries on the Umba River (White Sea basin).

USA

There are no salmon fisheries within US jurisdiction.

Other Parties

No new actions reported by the other Parties or other EU Member States.

2.	Have any new programmes been introduced to monitor the effects of management measures and identify information deficiencies? If "yes" please provide details.

European Union

Ireland

Attainment of the conservation limits referred to in section 1 above has been assessed since 2001.

Sweden

Activities have been started to establish an index river on the Swedish west coast.

United Kingdom

England and Wales

Compliance of all stocks with Conservation Limits is reviewed annually. Detailed assessments of all fishery management measures are undertaken every 5 years through a programme of Salmon Action Plans for all principal salmon rivers. Information was collected during 2002 for a review (by October 2003) of the national salmon measures introduced in 1999 to protect early-running fish.

Northern Ireland

Microtagging of smolts introduced in the Foyle area. Genetic profiling introduced in the Foyle area to inform stocking protocols.

Scotland

Fisheries Research Services are engaged in the development of new models to assess the value of catch data to assess abundance and stock dynamics for the purpose of supporting conservation and enhancement of the productivity and diversity of the fisheries.

Norway

The national river categorization system for salmon has been revised and applied in a nationwide survey of salmon rivers. The survey was undertaken by the Directorate for Nature Management in cooperation with the county environment protection offices. The information on the state of the stocks will be updated every year. The revised category system is more detailed but compatible with the classification system in the NASCO river database. The terms "lost", "threatened" and "maintained" have the same meaning in the two systems. The NASCO category "Not threatened with loss" comprises several categories in the Norwegian system (4a, 4b, 5a and 5b). In the Norwegian system there is no category for restored stocks. Restored stocks are categorized according to their present state and noted as restored. The form which was applied in the survey provides additional information on human impact factors, restoration and mitigative actions. The overall results of the survey are as follows:

Total number of rivers which have or have had a self-reproducing stock	454
1: Lost stocks	49
2: Threatened stocks	25
3.a: Vulnerable stocks – near threatened	29
3.b: Vulnerable stocks - maintained by mitigative actions	20
4.a: Reduced stocks – reduced young fish production	60
4.b: Reduced stocks – reduced number of adults only	5
5.a: Moderate or slightly affected stocks – requiring special concern	201
5.b: Moderate or slightly affected stocks – not requiring special concern	48
X: Uncertain classification	17

In addition there are 158 small rivers where salmon are known to occur but which do not have a self-reproducing stock, and 105 small rivers where the existence of a self-reproducing stock is uncertain.

Russian Federation

The effects of management measures are evaluated on the basis of stock status.

Other Parties

No new programmes reported by the other Parties or other EU Member States.

3.	Have any new measures been introduced to address any failure or trend in abundance or diversity? If "yes" please provide details.

European Union

Ireland

A national aggregated TAC of 219,649 salmon was included in the regulations in 2002, and applied to the commercial salmon fishery in 2002 to limit the catch in this sector.

Sweden

Additional fishery regulations have been implemented in 2002 in response to low abundance of fish in some rivers.

United Kingdom

England and Wales

Mixed stock salmon fisheries: the phase-out of these fisheries in England and Wales is continuing. Taw/Torridge seine net fishery: a new Net Limitation Order was introduced which will phase out this fishery as netsmen retire; the phase-out was accelerated by angling interests who paid compensation to 11 of the 14 netsmen who were willing to retire from the fishery immediately. A new Byelaw was also introduced reducing the fishing season by about one third.

Northern Ireland

Sediment studies under way on River Bush to address spawning gravel degradation.

Scotland

The Salmon Act 1986, as amended by the Salmon Conservation (Scotland) Act 2001, makes provision for the Scottish Ministers, either upon application or by themselves, to introduce regulations for the purpose of salmon conservation. Catch and release in the angling fishery continues to be adopted more widely, with a provisional figure of 41% of rod-caught salmon released in 2002.

Russian Federation

For the Umba River the commercial fishery has been closed and a complex programme has been developed aimed at restoring the stock.

USA

A river-specific hatchery program was initiated in response to low levels of wild salmon abundance and as a measure to help protect remaining genetic diversity. Habitat protection and restoration programs have been implemented in an effort to increase salmon abundance. Research is ongoing to partition mortality by life stage and to attempt to identify factors contributing to low abundance. A great deal of effort at the federal, state and local level has been, and continues to be, directed toward threat identification and abatement.

Other Parties

No new measures reported by the other Parties or other EU Member States.

4.	On the basis of on-going experience gained in applying the Decision Structure, please provide suggestions for its further development so as to further enhance its value and its effectiveness.

European Union

United Kingdom

England and Wales

The structure deals only with exploitation control. In that context it is helpful, but does not offer any advantage over current procedures used in Salmon Action Plans, apart from reference to risks associated with catch control measures and to the establishment of pre-agreed action, which are necessary additions to SAPs. It does not address environmental matters influencing carrying capacity and survival which is, therefore, the area for improvement.

Scotland

The structure forms a useful basis for establishing management models. The views of local managers on the value of the structure at river level will be important in determining the course which further development should take to address management issues in Scotland.

Other Parties

No suggestions provided by the other Parties or other EU Member States.

ANNEX 15

Council

CNL(03)33

Report by Canada on Progress with Application of the Decision Structure for Management of North Atlantic Salmon Fisheries

CNL(03)33

Report by Canada on Progress with Application of the Decision Structure for Management of North Atlantic Salmon Fisheries

1.	Have any new actions been taken to implement the Decision Structure for the management of salmon fisheries? If "yes" please provide details of these actions and a selection of case studies to illustrate its application.

For Atlantic salmon management, Canada has already been using a river classification system for a number of years. River classifications establish certain management measures (e.g. retention limits, closures, catch and release only) for each river, based on factors such as: are conservation spawning requirements being met, level of angling effort, proximity to densely populated areas, and overall size of the river and of the salmon population in it.

Conservation limits are set where enough information exists, management targets are established, and in-season monitoring indicates whether conservation limits will be met. When the limits are not met, the management process provides for pre-agreed management actions to be implemented, such as catch and release fishing only, or complete closure of the river.

The Decision Structure has been applied to a selection of rivers in each Canadian province. Canadian fisheries managers are finding that the Decision Structure is leading to the same decisions that are reached through the usual (pre-Decision Structure) process.

2.	Have any new programmes been introduced to monitor the effects of management measures and identify information deficiencies? If "yes" please provide details.

For the Upper Bay of Fundy and Southwest New Brunswick stocks:

- a smolt tracking program has been initiated using sonic tagging devices;
- a live-capture smolt program is conducted in the Bay of Fundy using a marine trawl.

Smolt monitoring programs have been initiated in three major rivers of the southern Gulf of St. Lawrence to assess the level of freshwater production and monitor marine survivals.

3.	Have any new measures been introduced to address any failure or trend in abundance or diversity? If "yes" please provide details.

For the Upper Bay of Fundy and Southwest New Brunswick stocks, live gene banking operations are underway for endangered populations.

Emphasis is being placed on reducing or eliminating the use of gillnets in the Aboriginal food fisheries in New Brunswick to allow for selective live release of large salmon.

4. On the basis of on-going experience gained in applying the Decision Structure, please provide suggestions for its further development so as to further enhance its value and its effectiveness.

Generally, Canada is finding that the Decision Structure process mirrors that already used by Canadian fisheries managers, i.e. setting conservation limits, assessing the risks of various scenarios for action, and implementing pre-agreed measures when the limits are not met. At this point, no new approaches to management of Atlantic salmon have arisen in Canada as a result of the Decision Structure.

Canada agrees with the comment of the EU that the Decision Structure could more clearly address environmental considerations (e.g. water quality).

ANNEX 16

Council

CNL(03)16

Reports on Progress with Development and Implementation of Habitat Protection and Restoration Plans

CNL(03)16

Reports on Progress with Development and Implementation of Habitat Protection and Restoration Plans

Summary

1. At its 2001 Annual Meeting the Council adopted a NASCO Plan of Action for Application of the Precautionary Approach to the Protection and Restoration of Atlantic Salmon Habitat, CNL(01)51. The overall objective of this Plan of Action is to maintain and, where possible, increase the current productive capacity of Atlantic salmon habitat through the establishment and implementation, by the Contracting Parties and their relevant jurisdictions, of comprehensive salmon habitat protection and restoration plans. The Parties agree to report to NASCO on progress towards implementation of their plan on an ongoing basis. In order to measure and improve progress in meeting the objective, the Plan proposes the establishment of inventories of rivers, with regular reports to the Council on these inventories.

2. Last year the Council held a Special Session on habitat protection and restoration. The report of this Special Session is presented separately as document CNL(03)15. The information presented suggested that the loss of freshwater habitat, which had been highly significant over the last 100 years or so, may have stabilized and some lost habitat restored. The Secretary was asked to develop, in consultation with the Parties, a simple reporting format for information in relation to implementation of the Plan of Action for use by the Parties on an annual basis and this format was used on a trial basis for the 2003 returns. The Council will be asked to adopt this format for future returns or take such other actions as it considers appropriate. The information provided by the Parties according to this format is attached. At the time of preparation of this report, no return had been received from Canada, the Faroe Islands or some EU Member States with salmon interests (Denmark, France and Spain).

3. Progress in developing inventories of salmon rivers has been reported by the EU (Ireland, Sweden and the United Kingdom), Norway, Russia and the USA, although these are not necessarily based fully on the structure proposed in the Plan of Action. There has also been progress in establishing habitat protection and restoration plans in the EU (Ireland, Sweden and the United Kingdom), Russia and the USA, with monitoring to assess the effectiveness of the plans.

Secretary
Edinburgh
2 May, 2003

1.	Has an inventory of rivers, as envisaged in Annex 2 of the NASCO Plan of Action, been established or updated since the last notification? If "yes" please provide a brief description of the inventory or of any changes to an existing inventory.

European Union

Ireland

The current Irish inventory of rivers is being modified in line with NASCO's suggested inventory. There are approximately 190 main stem rivers in Ireland. While 120 support salmonids, approximately 93 contain salmon stocks. The current inventory contains the following information for all of these rivers:

- River number (OS index)
- Region
- River name
- Location (latitude and longitude)
- Brief description
- NASCO category
- Catchment area
- Total length
- Axial length
- Maximum altitude
- Hydrographic characteristics
- Presence of trap or counter
- Conservation limit (provisional)

Sweden

An inventory of all salmon rivers has existed for several years. It describes the physical characteristics of each salmon river, obstacles to migration, and the size and the quality of rearing habitat for salmonids. The salmon population in each river is described with regard to the present status, need for protection, the extent to which it is dependent on continued liming operations, and other factors such as releases and the fishery. A list briefly summarising the actions to be taken for each river has been developed. This list, as well as the inventory, needs to be revised so as to be more consistent with Annex 2 of the NASCO Plan of Action.

United Kingdom

England and Wales

Various inventories are employed for the management of salmon rivers in England and Wales, for example for the establishment and review of conservation limits in 68 principal salmon rivers. A Geographic Information System (GIS)-based method for estimating the extent and quality of salmon habitat is in development, to be completed during 2004.

Northern Ireland

GIS inventories were updated for rivers in the Foyle and Carlingford area, and in the Bush, Glendun, Maine and Blackwater rivers in the FCB area. These record data on habitat quantity and quality, juvenile fish abundance and adult escapement.

Scotland

Salmon fishery management is devolved to District Salmon Fishery Boards. A number of Fishery Trusts has also been established. Trust biologists and biologists employed by DSFBs have established a series of inventories listing either rivers or habitat problems relevant to their areas of jurisdiction.

Norway

A new categorization system for rivers with salmon has been developed (see document CNL(03)14).

Russian Federation

Compilation of an inventory has been initiated. It now includes the complete information required for 2 rivers and partial information for another 76 rivers.

USA

The US is in the process of developing a salmon river habitat database, using the structure contained in Annex 2 of the NASCO Plan of Action. As agreed by NASCO, the inventory will include river data, salmon production data, habitat impact data and salmon river classification. A database template (in Access software) was reviewed at the US Atlantic Salmon Assessment Committee meeting in February 2003. The Committee identified the need for consistent terminology and definitions. A subgroup with a representative from each salmon watershed has been formed to further refine the database structure.

Other Parties

No progress in establishing inventories of salmon rivers has been reported by the other Parties or the other EU Member States.

2.	Has a comprehensive salmon habitat protection and restoration plan been developed in accordance with the aims of the NASCO Plan of Action, or an existing plan updated, since the last notification? If "yes" please provide brief details of the plan and the extent of its implementation or of any changes to an existing plan since the last notification.

European Union

Ireland

No specific plan has been developed. However, the objectives of National Programmes run by state agencies are in accordance with the NASCO Plan of Action.

The Irish plan can be summarised as follows:

- Establish a river inventory
- Quantify the extent of existing habitat
- Estimate the productive capacity of this habitat
- Estimate the current level of production
- Identify shortfalls and the potential for recovery in damaged habitats
- Enhance damaged habitat
- Monitor outcome and recovery rate

Sweden

A full description of the current situation is given in section 1 above. The present protection and restoration plan needs to be revised and expanded to be consistent with the NASCO Plan of Action.

United Kingdom

England and Wales

Salmon Action Plans (SAPs) are being developed for all principal salmon rivers in England and Wales. Each SAP comprises two documents. The Consultation document reviews stock and fishery status, identifies factors limiting performance and lists a series of costed options to address these. Following consultation on this document, a Final Plan is prepared containing an agreed list of actions to be addressed within five years. Progress against these actions is reviewed annually. SAPs are expected to be completed for all principal salmon rivers in England and Wales by the end of 2003.

Northern Ireland

A Habitat Restoration Plan has been prepared and funding for implementation is being sought. This will build on the work on the Salmon Management Plans referred to in section 1 above.

Scotland

In line with the local management structure in Scotland, DSFBs and Fishery Trusts have been developing plans relevant to their areas of jurisdiction. A number of habitat enhancement programmes are in place throughout Scotland, including river bank stabilisation, riparian buffer strips, removal/easing of man-made and natural obstructions, guidance on construction of culverts, bridge aprons and other river crossings. Introduction by the Forestry Commission of the *Forests and Water Guidelines* has been of major significance in ensuring sustainable forestry development while reducing impacts on water courses.

Russian Federation

Salmon habitat protection and restoration plans have been developed for two rivers.

USA

A great deal of time and effort over the past year has been focused on the development of a recovery plan for endangered populations of Atlantic salmon. This plan includes provisions for the protection and restoration of Atlantic salmon habitat. Atlantic salmon restoration programs on other rivers, such as the Connecticut and Merrimack, are conducted under management plans that include provisions for salmon management and habitat protection.

Other Parties

No progress in developing comprehensive salmon habitat protection and restoration plans has been reported by the other Parties or the other EU Member States.

3.	If a Plan has been developed or updated since the last notification have evaluation and monitoring systems been introduced or updated to assess the effectiveness of the plan in protecting and restoring salmon habitat? If the response to question 2 was "yes" please provide details of these systems or of changes to existing systems since the last notification.

European Union

Ireland

Monitoring of EU-funded physical enhancement works continued in 2002 as part of project deliverables.

United Kingdom

England and Wales

Evaluation and monitoring programmes are reviewed annually as part of the development and implementation of Salmon Action Plans. The national fisheries monitoring programme was revised in 2000. Implementation in 2001 was impaired by the Foot and Mouth Disease outbreak and 2002 was the first full year of the new programme (comprising electrofishing, trapping, counters and catch recording). A review has been completed of salmon stocks in recovering rivers.

Northern Ireland

Monitoring data on specified catchments as follows:

- Adult escapement
- Juvenile populations
- Habitat quantity and quality

Scotland

The Scottish Fisheries Coordination Centre has developed protocols for electrofishing and habitat surveys to ensure standard sampling procedures are used throughout Scotland. Trust and DSFB biologists undertake regular sampling to assess fish population and habitat status.

Russian Federation

Federal nature conservation authorities assess the effectiveness of plans for protection of salmon habitat on the basis of plans of actions developed by the water users and approved by the relevant authorities, and annual mandatory reports provided by the users.

USA

Monitoring provisions will be included as part of the recovery plan for endangered Atlantic salmon populations. The process of identifying appropriate systems and evaluation criteria is ongoing.

Other Parties

No progress in developing evaluation and monitoring systems has been reported by the other Parties or the other EU Member States.

ANNEX 17

Council

CNL(03)34

Report by Canada on Progress with Development and Implementation of Habitat Protection and Restoration Plans

CNL(03)34

Report by Canada on Progress with Development and Implementation of Habitat Protection and Restoration Plans

1.	Has an inventory of rivers, as envisaged in Annex 2 of the NASCO Plan of Action, been established or updated since the last notification? If "yes" please provide a brief description of the inventory or of any changes to an existing inventory.

A number of inventories of Canadian Atlantic salmon rivers and their physical and biological characteristic have existed for years. However, one common database for all salmon rivers including all of the physical and biological information outlined in the NASCO Plan of Action does not yet exist.

A number of inventories were carried out over the past year by the various jurisdictions involved in salmon management. These include the recent University of PEI and ASF report on the distribution and relative abundance of salmonids in PEI. The final report will analyze the watershed land-use activities in each river sampled and provide historical accounts of salmon runs and river conditions. Another example is the recent database that has been created for the entire island of Newfoundland that identifies and documents fish passage related concerns.

The Department of Fisheries and Oceans has recently completed the development of a Geographic Information System to access all habitat related information on streams and rivers in the province of Quebec including the salmon rivers. A similar system has recently been developed in Newfoundland and Labrador.

Further inventory development is expected in 2003/2004.

2.	Has a comprehensive salmon habitat protection and restoration plan been developed in accordance with the aims of the NASCO Plan of Action, or an existing plan updated, since the last notification? If "yes" please provide brief details of the plan and the extent of its implementation or of any changes to an existing plan since the last notification.

All fish habitat in Canada is managed according to the national Policy for the Management of Fish Habitat. A net gain in the productive capacity of fish habitat is the overall objective. Progress towards this objective is achieved through the active conservation of the current productive capacity of habitats, the restoration of damaged fish habitats and the development of new habitats.

The focus for Atlantic salmon habitat continues to be the conservation of the current productive capacity. It is important to note that of the approximately 675 Atlantic salmon rivers in Canada, close to 200 are considered relatively pristine due to remoteness and low population density. Most of the remaining rivers still have a large productive capacity, which is currently being underutilized due to low adult returns.

The focus on conservation through the application of the no net loss principle is fundamental to the habitat conservation goal. Under this principle, DFO and its partners strive to balance unavoidable habitat losses with habitat replacement on a project-by-project basis so that further reductions to Canada's Atlantic salmon resources due to habitat loss or damage is prevented.

There is currently significant amount of restoration work underway on a number of watersheds. DFO's contribution to this restoration work is focused on improving and restoring access across natural barriers such as dams and obstructions such as culverts. Many community and stewardship groups are involved in restoration works of various kinds as discussed at the previous two NASCO Special Habitat Sessions.

Although an overall conservation and restoration plan already exists, it is being further refined and developed at the watershed level. A number of new watershed management plans are being implemented and more being developed.

3. If a Plan has been developed or updated since the last notification have evaluation and monitoring systems been introduced or updated to assess the effectiveness of the plan in protecting and restoring salmon habitat? If the response to question 2 was "yes" please provide details of these systems or of changes to existing systems since the last notification.

Some monitoring to measure the efficacy of conservation and restoration initiatives in Canada has and continues to occur; however, it is recognized that further monitoring would be beneficial. The Habitat Management program is moving towards a more results based approach and is developing a Results Based Management Accountability Framework (RMAF) which will place more emphasis on measuring and reporting on how well we are achieving the net gain of productive capacity of fish habitat objective.

An example of the monitoring that is conducted on a regular basis relates to the conservation goal. For all development projects that result in the loss of productive capacity of fish habitat, the proponent must not only propose and implement a habitat compensation plan that replaces the productive capacity that is lost but must also monitor the effectiveness of the compensation works for a period varying from 1 year to 25 or more years and make the necessary adjustments to achieve no net loss.

ANNEX 18

Council

CNL(03)17

Report of a Meeting of the Standing Committee on the Precautionary Approach (SCPA) on Application of the Precautionary Approach to Aquaculture, Introductions and Transfers, and Transgenics

CNL(03)17

Report of a Meeting of the Standing Committee on the Precautionary Approach (SCPA) on Application of the Precautionary Approach to Aquaculture, Introductions and Transfers, and Transgenics

1. In response to concern about the risks to the wild stocks from aquaculture, introductions and transfers and transgenics, the Council and Commissions of NASCO have developed five agreements designed to minimise impacts. All of these agreements, with the exception of the containment guidelines, were developed prior to the adoption by NASCO and its Contracting Parties of the Precautionary Approach. Since NASCO first started to look at these issues, salmon farming production has increased ten-fold to more than 700,000 tonnes, transgenic salmon have been developed for commercial use, and there has been increasing interest in introductions and transfers for use in aquaculture and in stocking programmes. Advances in scientific understanding, particularly with regard to genetic and disease impacts of cultured fish on the wild stocks, indicate that NASCO was highly justified in its concerns and in developing measures to minimise impacts even though, at the time, there was considerable scientific uncertainty. The task of the SCPA at its fourth meeting, held in Williamsburg, Virginia, was to review the five agreements to ensure their consistency with the Precautionary Approach.

2. The SCPA has proposed to the Council that all the existing agreements should be restructured into one new "umbrella" Resolution with annexes and should be amended to give greater emphasis to appropriate placement of the burden of proof, risk assessment, mitigation and corrective measures, implementation and reporting. A new annex with guidelines on stocking has been added. The new Resolution which, when adopted by the Council, might become known as the "Williamsburg Resolution", forms a coherent set of internationally acceptable measures concerning application of the Precautionary Approach to aquaculture, introductions and transfers, and transgenics.

3. The Committee felt that the new Resolution would lead to a strengthening of the protection for the wild stocks in accordance with the Precautionary Approach. One measure specifically highlighted in the Committee's report as offering additional benefits in protecting the wild stocks from irreversible genetic impacts is the use of sterile farmed salmon. However, it was recognised that husbandry and marketing concerns would need to be addressed before they could be used widely. The industry have agreed that these issues will be raised at the next Liaison Group meeting and Workshop in 2004 (see CNL(03)23). Given the continuing problems of ensuring containment of farm salmon, the rapid growth of the industry, and new scientific information concerning the adverse genetic consequences of interbreeding between wild and farm salmon, the Council may wish to give this aspect further consideration.

4. The Council had previously recognised that there would be a need for consultations with stakeholders on the SCPA's recommendations. This process began in Williamsburg at the Liaison Group meeting with the salmon farming industry, which has agreed to respond after ISFA's annual meeting in May. The Parties agreed to undertake consultations nationally and report back to the Council at or before its Twentieth Annual Meeting.

5. The Council is asked to consider the draft Resolution contained in Annex 10 of the attached report with a view to its adoption.

Secretary
Edinburgh
7 April, 2003

SCPA(03)15

Report of a Meeting of the Standing Committee on the Precautionary Approach on Application of the Precautionary Approach to Aquaculture, Introductions and Transfers, and Transgenics

Williamsburg Lodge, Williamsburg, Virginia, USA

10-12 March, 2003

1. Introduction

1.1 The Chairman of the Standing Committee on the Precautionary Approach (SCPA), Mr Jacque Robichaud (President of NASCO), opened the meeting and thanked the US Government for hosting the meeting and for the arrangements made. Mr Rollie Schmitten welcomed participants to Williamsburg and introduced the new US Commissioner to NASCO, Ms Pat Kurkul, North-East Regional Director of NOAA Fisheries.

1.2 The Chairman, on behalf of the SCPA, had conveyed the best wishes of the group to the Head of the Canadian delegation, Mr David Bevan, and to the Head of the EU Delegation, Mr Ole Tougaard, who could not attend the meeting because of illness.

1.3 A list of participants is contained in Annex 1. One Contracting Party, Denmark (in respect of the Faroe Islands and Greenland), was not represented at the meeting.

2. Adoption of the Agenda

2.1 The Committee adopted its agenda, SCPA(03)14 (Annex 2). Clarification was sought on the goals for the meeting and in relation to agenda item 6, 'Arrangements for consultations with relevant stakeholders'. The Chairman responded that the goal for the meeting was to develop recommendations on the consistency of the five agreements with the Precautionary Approach, on implementation of the measures and on reporting procedures. These could then be discussed with relevant stakeholders. The Council had previously agreed that a report on the Committee's work be made to the North Atlantic salmon farming industry at the next meeting of the Liaison Group which followed the SCPA meeting. However, the Chairman pointed out that as the work of the Committee also includes application of the Precautionary Approach to other forms of aquaculture, to transgenics and to introductions and transfers, the Council had decided that there would be a need for broad consultations between the Parties and other stakeholders. The outcome of these consultations could then be presented to the Council when it considers the Committee's recommendations at its next Annual Meeting.

3. Consideration of the Terms of Reference

3.1 The Committee considered its Terms of Reference, SCPA(03)2. It was noted that the report of the meeting would form recommendations to NASCO Council. It would be for the Council to decide on the appropriate action in light of the Committee's recommendations.

4. Review of present NASCO Agreements with regard to their consistency with the Precautionary Approach

4.1 The Secretary introduced a discussion document, SCPA(03)3 (Annex 3). He believed that, given the NASCO definition of the Precautionary Approach, an outside observer might conclude that only the guidelines on transgenic salmon came close to satisfying the full requirements of the Precautionary Approach. They identify an undesirable outcome, irreversible change, and they propose measures to ensure that such an outcome is unlikely. Moreover, they appear to have been fully implemented. The other agreements might be considered to fall short of the Precautionary Approach requirements because they still permit a significant risk of irreversible genetic and other damage and they do not ensure appropriate placement of the burden of proof. Furthermore, they do not include measures to address unintentional introductions and transfers or stocking practices. The Secretary referred to genetic and other concerns about stocking practices and suggested that guidelines on stocking might be developed. He noted that comprehensive reporting procedures are in place for all the agreements except the transgenic guidelines.

4.2 Reviews concerning implementation of the agreements and their consistency with the Precautionary Approach were tabled by Canada, SCPA(03)10 (Annex 4); the European Union, SCPA(03)11 (Annex 5); Iceland, SCPA(03)6 (Annex 6); Norway, SCPA(03)8 (Annex 7); the Russian Federation, SCPA(03)12 (Annex 8); and the USA, SCPA(03)7 and SCPA(03)9 (Annex 9).

4.3 Canada indicated that it has made significant progress in implementing the Precautionary Approach using a risk assessment approach to managing its resources and has set up a governance structure to oversee its application. Canada felt that it would be appropriate to examine the reason behind the decline in wild salmon stocks, salmon at sea mortality, abundance enumeration, and the interaction between wild and cultured fish.

4.4 The European Union reported that the Oslo Resolution and the NEAC Resolution had been very fully implemented in most Member States and that work was in progress on developing Action Plans on the containment of farmed fish. The Community recognised, however, that the various agreements under consideration did not fully accord with the Precautionary Approach and that in developing them to this end, the opportunity should be taken to create a comprehensive statement of NASCO resolve in respect of minimising the adverse impacts of aquaculture, introductions and transfers and transgenic fish.

4.5 Iceland reported on the implementation of the agreements and how they have been incorporated into Icelandic laws and regulations.

4.6 Norway referred to a recent decision to establish a number of protected zones for salmon which are intended to provide additional protection for the most important salmon rivers and fjords. A system of tagging farm salmon is also under consideration. Thirty-three Norwegian stocks are being held in living gene banks.

Norway considers that these measures are consistent with the Precautionary Approach.

4.7 The Russian Federation indicated that there was a need to introduce stronger measures to reduce the escape of farmed salmon and to enhance exchange of information on escapes. The Parties should also be requested to provide more detailed information concerning outbreaks of known and unknown diseases and parasitic infections.

4.8 The two documents tabled by the US identified areas in each of the five agreements that could be improved to incorporate the Precautionary Approach, but noted that the agreements provided very useful guidance and direction for national implementation. The US stressed the importance of implementation of the agreements. The documents tabled also included summaries of US implementation of the agreements, and concluded that, overall, the US was implementing them. The documents suggested the following five general recommendations for improvement of the agreements, and reviewed each of them per these recommendations: (1) Increase Specificity; (2) Implementation and Reporting; (3) Risk Assessment; (4) Burden of Proof; and (5) Improved Scientific Exchange.

4.9 The SCPA first considered the question of whether the Oslo Resolution, the Guidelines on Containment of Farm Salmon and the Guidelines for Action on Transgenic Salmon could be considered as being consistent with the Precautionary Approach as it has been defined by and adopted by the Council.

4.10 The Chairman, in a statement, and the Secretary, in his report SCPA(03)3, suggested to the SCPA that these three Agreements could not be considered as fully consistent with the Precautionary Approach, since they did not protect the wild stocks from irreversible genetic damage. The Chairman said that very large numbers of fertile farmed fish are escaping and interbreeding with wild stocks creating risks of irreversible change. Salmon farms can form reservoirs of sea lice that can seriously reduce wild salmon populations in the vicinity. Moreover, he said that, consequently, a full implementation of the Precautionary Approach, although it might not be currently feasible, might need to involve rearing farmed salmon in secure, self-contained land-based facilities or using sterile salmon in sea cages so that the genetic integrity and diversity of the wild stocks could be preserved.

4.11 The Parties felt that the Oslo Resolution could be improved so as to make it more consistent with the Precautionary Approach. The wording was sometimes vague and could be made more specific. There could be more consistency between agreements, including the definitions, and more details on risk assessment procedures could be incorporated. Additionally, the reporting procedures could be strengthened and there could be more clarity concerning appropriate placement of the burden of proof. Perhaps most importantly, the level of implementation needs to be clearly established. Increased research of relevance to the Resolutions, and cooperation in disseminating the results of such research, would also be highly desirable.

4.12 Following consultations, the Committee, consistent with the Terms of Reference, decided that all five agreements might be restructured into one “umbrella” Resolution, based on the Oslo Resolution, with a number of Annexes and Appendices so as to include all the elements in the five agreements plus some new or revised elements such as guidelines on stocking, a comprehensive list of definitions, principles on placing the burden of proof, an element on risk assessment, implementation and reporting. It was felt that this unification would increase clarity and ensure that all the areas of concern were logically addressed. The Committee was reassured that none of the measures to minimize impacts in the existing Agreements were omitted and that the revision process would lead to a strengthening of the protection for wild stocks in accordance with the Precautionary Approach.

4.13 The Committee recognised that the use of sterile salmon might offer benefits in protecting the wild stocks from genetic impacts from escapees but that husbandry and marketing concerns would need to be addressed before they could be used in farming. The Committee agreed that these issues should be raised with the salmon farming industry through the Liaison Group.

5. Recommendations on:

(a) the need for any modifications to the present NASCO Agreements or for additional measures

5.1 The SCPA proposed to the Council of NASCO the adoption of a new Resolution, which it suggests might be known as the 'Williamsburg Resolution'. This Resolution, together with all its Annexes, would form one coherent set of internationally acceptable measures concerning application of the Precautionary Approach to introductions and transfers, aquaculture and transgenics. This document, SCPA(03)13, is attached as Annex 10.

5.2 The Annexes required to support this document are extensive and the time available at the SCPA meeting had been very limited. While the SCPA did not anticipate further significant revisions to these Annexes there would be a need, for example, to consult geneticists on some details of the stocking guidelines. Such consultations might produce proposals for minor changes, which would be communicated to the Secretary. The SCPA also asked the Secretary to carry out any necessary editing to make the document consistent in format and style before it is submitted to the Council.

(b) the need for modification to existing reporting procedures

5.3 The Committee agreed that thorough and transparent reporting procedures are a vital element of applying the Precautionary Approach to introductions and transfers, aquaculture and transgenics. Such reporting provides monitoring of implementation and could also highlight any areas of difficulty. The Committee asked the Secretary to re-develop the reporting procedures (CNL(98)42) so as to reflect the new structure of the Resolution. A new format for reporting under the Guidelines for Action on Transgenic Salmon, based on the draft format contained in Annex 1 of document SCPA(03)3, should be included. The reporting procedure should indicate whether or not the measures taken in accordance with the Resolution are mandatory and how they are enforced. The new reporting format, when agreed by the Council, might then be annexed to the Resolution.

6. Arrangements for consultations with relevant stakeholders

6.1 The Council had agreed that the report of the SCPA meeting should be circulated to relevant stakeholders. The Committee agreed that a verbal report on the meeting and the draft 'Williamsburg Resolution' would be presented to the North Atlantic salmon farming industry through the Liaison Group meeting on 13 March. However, as the Committee had examined issues wider than salmon farming, i.e. introductions and transfers, enhancement and transgenics, the Council had asked the Parties to undertake consultations on these issues with the stakeholders and report back to the Council well in advance of the Twentieth Annual Meeting when the report of the SCPA meeting will be considered.

7. Report of the meeting

7.1 The Committee agreed a report of the meeting.

8. Other business

8.1 There was no other business.

9. Date and place of next meeting

9.1 The Committee agreed that it would not meet again before the Twentieth Annual Meeting of NASCO, at which time the Council would consider arrangements for the next meeting of the SCPA in accordance with the Action Plan for Application of the Precautionary Approach.

9.2 The Chairman thanked the participants for their contributions to the meeting.

List of Participants

Canada

Ms Julia Barrow	Department of Fisheries and Oceans, Ottawa, Ontario
Mr Guy Beaupré	Department of Fisheries and Oceans, Ottawa, Ontario
Ms Darlene Elie	Department of Fisheries and Oceans, Ottawa, Ontario
Mr Paul Lyon	Department of Fisheries and Oceans, Ottawa, Ontario
Mr David Meerburg	Department of Fisheries and Oceans, Ottawa, Ontario
Mr John Moores	Department of Fisheries and Oceans, Ottawa, Ontario
Mr Jacque Robichaud (Chairman)	President of NASCO
Mr Tim Young	Department of Fisheries and Oceans, Ottawa, Ontario

European Union

Ms Carmen Beraldi	Secretaria General Pesca Maritima, Madrid, Spain
Dr Malcolm Beveridge	FRS Freshwater Fisheries Laboratory, Pitlochry, UK
Mr Richard Cowan	Department of the Environment, Fisheries and Rural Affairs, London, UK
Mr David Dunkley	Scottish Executive Rural Affairs Department, Edinburgh, UK
Mr Pentti Munne	Ministry of Agriculture and Forestry, Helsinki, Finland
Mr Ted Potter	Centre for Environment, Fisheries and Aquaculture Science, Lowestoft, UK
Mr Adrian Taylor	Environment Agency, Bristol, UK
Mr Andrew Thomson	European Commission, Brussels, Belgium
Dr Ken Whelan	Marine Institute, Newport, Ireland

Iceland

Mr Arni Isaksson	Directorate of Freshwater Fisheries, Reykjavik

Norway

Mr Øyvind Walsø	Directorate for Nature Management, Trondheim

Russian Federation

Ms Svetlana Krylova	Murmanrybvod, Murmansk
Ms Elena Samoylova	PINRO, Murmansk
Dr Boris F Prischepa	Murmanrybvod, Murmansk
Dr Alexander Zubchenko	PINRO, Murmansk

USA

Ms Jessica Anthony	National Marine Fisheries Service, Gloucester, Massachusetts
Mr Edward Baum	Atlantic Salmon Unlimited, Hermon, Maine
Ms Kimberly Blankenbeker	National Marine Fisheries Service, Silver Spring, Maryland
Ms Nikki Brajevich	US Department of State, Washington DC
Mr Stephen Chase	Atlantic Salmon Federation, New Brunswick, Canada
Ms Mary Colligan	National Marine Fisheries Service, Gloucester, Massachusetts
Mr Stephen Gephard	Department of Environmental Protection, Old Lyme, Connecticut
Ms Patricia Kurkul	National Marine Fisheries Service, Gloucester, Massachusetts
Mr Pasquale J Scida	National Marine Fisheries Service, Gloucester, Massachusetts
Mr Rollie Schmitten	National Marine Fisheries Service, Silver Spring, Maryland

Secretariat

Dr Peter Hutchinson

Dr Malcolm Windsor

<u>Annex 2 of SCPA(03)15</u>

SCPA(03)14

Meeting of the Standing Committee on the Precautionary Approach On the Application of the Precautionary Approach to Introductions, Transfers, Aquaculture and Transgenics

Agenda

1. Introduction
2. Adoption of the Agenda
3. Consideration of Terms of Reference
4. Review of present NASCO Agreements with regard to their consistency with the Precautionary Approach:
   - (a) the North American Commission's Protocols on Introductions and Transfers (NAC(92)24 as amended by NAC(94)14)
   - (b) the North-East Atlantic Commission's Resolution on Introductions and Transfers (NEA(97)12)
   - (c) the Council's Oslo Resolution (CNL(94)53)
   - (d) the Council's Guidelines for Action on Transgenic Salmon (CNL(97)48)
   - (e) the Liaison Group's Guidelines for Containment of Farm Salmon (CNL(01)53)
5. Recommendations on:
   - (a) the need for any modifications to the present NASCO Agreements or for additional measures
   - (b) the need for modification to existing reporting procedures
6. Arrangements for consultations with relevant stakeholders
7. Report of the meeting
8. Other business
9. Date and place of next meeting

SCPA(03)3

Review of present NASCO Agreements and Measures with regard to their consistency with the Precautionary Approach - discussion document

Introduction

1. The Standing Committee on the Precautionary Approach (SCPA) has been asked by the Council to review NASCO's Agreements and measures in relation to introductions and transfers, aquaculture and transgenics and advise on their consistency with the Precautionary Approach and to make recommendations for additional measures taking account of appropriate risk assessments (see SCPA(03)2 for detailed Terms of Reference).

2. The Precautionary Approach is a new guiding philosophy which requires NASCO and its Contracting Parties to be more cautious when information is uncertain, unreliable or inadequate and the absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures. The Agreement on Adoption of a Precautionary Approach (CNL(98)46) specifies the factors that should be taken into account in application of the Precautionary Approach and the SCPA may wish to look at each of the five agreements with the following questions in mind:

   (a) Does it consider the needs of future generations and avoid changes that are not potentially reversible?

   (b) Does it identify undesirable outcomes and contain measures to avoid or correct them?

   (c) Does it include a mechanism for the initiation of corrective measures without delay and would these corrective measures achieve their purpose promptly?

   (d) Does it give priority to conservation of the productive capacity of the resource where the likely impact of resource use is uncertain?

   (e) Does it appropriately place the burden of proof?

3. There are perhaps four main aspects for the SCPA to consider in reviewing these agreements:

   (a) Are the measures contained in the agreements consistent with the Precautionary Approach as outlined in paragraph 2 above? If not, what additional measures are required?

(b) Have the measures in the agreements been fully implemented by the Contracting Parties, and have monitoring and enforcement procedures been introduced?

(c) Has consideration been given to both intentional and unintentional introductions and transfers?

(d) Have appropriate reporting procedures been developed for each of the agreements?

4. The Contracting Parties have been asked to provide an analysis of their own actions in relation to each of the agreements (item 3(b) above). In this discussion document, prepared to stimulate debate, we review the scientific background, including new information, assess the agreements' attributes and failings measured against the principles of the Precautionary Approach, consider the existing reporting procedures, and assess if both intentional and unintentional introductions and transfers have been considered.

Scientific Background

5. NASCO has been concerned about the impacts of introductions and transfers and aquaculture on the wild stocks of Atlantic salmon since the mid-1980s, but recognised that initially there were considerable gaps in knowledge of these impacts. A number of scientific meetings have been convened in order to review the available scientific information and identify research requirements, commencing in 1989 with a joint NASCO/ICES meeting to review the genetic threats to wild stocks from salmon aquaculture. A range of views on the impacts of farmed salmon on the wild stocks was expressed, from no impact (or even benefits) to serious impacts, but the only evidence presented suggested that adverse effects were possible. There was general agreement on the need for, and difficulty associated with, experiments to assess the genetic impact. The meeting also recognised the need for adoption of Codes of Practice to reduce the genetic threats and the impacts of introductions and transfers in general. These views were reiterated a year later at a major international symposium, supported by NASCO, on the Impacts of Aquaculture on Wild Stocks held in Loen, Norway. It was concluded that moving salmon, except under carefully controlled conditions, is "a highly undesirable practice and should be minimised".

6. By 1997 concerns about the impacts of cultured salmon on the wild stocks had grown further, and the Council held an international symposium in Bath, England in conjunction with ICES entitled "Interactions between Salmon Culture and Wild Stocks of Atlantic Salmon: the Scientific and Management Issues". Some of the experts present felt that loss of local adaptations and displacement of wild fish as a result of interbreeding with farmed salmon could lead to the collapse of wild populations, although the necessary experimentation to confirm this had not been conducted. The need to improve containment of farmed salmon was stressed. The symposium highlighted the serious adverse impacts from diseases and parasites. It was noted that most endemic diseases and parasites were under control in fish farming, with the exception of sea lice. Serious concerns were also expressed about potential adverse effects of transgenic salmon on the wild stocks.

7. At the Sixth International Atlantic Salmon Symposium in July 2002 in Edinburgh, even more concern was expressed about impacts of sea lice and escapes of farm salmon. Some wild salmon populations in the vicinity of salmon farms (<20km) appear to have particular problems, which have resulted in local extinctions, threats of further extinctions and serious economic losses. While there has been encouraging progress in controlling lice numbers on some farms, particularly in the spring, lice emanating from fish farms can cause high levels of mortality on wild salmonid populations and the level of infestation is highest in densely farmed areas. The need to consider improvements in monitoring lice levels in farms and for transparency of the information obtained was stressed. With regard to escapes, the long-awaited results of the scientific experiments called for since 1989 confirmed that escapees from salmon farms pose a serious genetic threat to the fitness and viability of wild salmon populations and that the hybrid vigour or "new blood" argument is not justified. Repeated intrusions of farmed salmon may lead to extinction of locally adapted populations. While there has been progress in improving containment, the need for significant improvement was stressed. The continuing growth of the industry means that containment measures and treatment of lice must become increasingly effective.

8. As part of the EU-funded SALGEN project, a symposium was held in January 2003 in Ireland, entitled "Genetics and the Conservation of Atlantic Salmon". This symposium was designed to facilitate dialogue between managers of wild Atlantic salmon and geneticists, and a number of conclusions were drawn in relation to the genetic impact of farm escapees. It was suggested that in the region of 2 million farm salmon are escaping into the North Atlantic each year and, in addition, there are escapees from freshwater hatcheries for which there is little quantitative information. While the breeding success of escapees is lower than wild salmon, the numbers are so large in some rivers that there is a high potential for genetic damage to wild populations, with regular escapes resulting in a cumulative reduction in fitness. Aquaculture uses only a few strains and this could result in homogenisation of the differences present among wild salmon populations, reducing the ability of wild salmon populations (and perhaps the farming industry) to adapt to future environmental change. The need for much improved containment was stressed, as was the need for caution when stocking salmon rivers.

9. In summary, the advances in scientific understanding of the impacts of aquaculture (and introductions and transfers) indicate that NASCO was justified in its concerns and in taking action. While these are by no means the only threats to wild salmon populations, it would have been irresponsible to assume there were no impacts. Since NASCO first started to look at these issues, there has been increasing interest in introductions and transfers, annual production in salmon farming has increased from less than 70,000 tonnes to more than 700,000 tonnes and transgenic salmon have been developed for use in aquaculture. Repeatedly the scientific advice has recommended the need for caution in movements of live salmonids, for improvements to containment (either through the use of land-based units or of sterilisation techniques), for improvements in health management, for the use of aquaculture-free zones and for tagging of farmed salmon. If the Precautionary Approach had been in place prior to the development of these agreements, then the proponents would have had to show that the activity proposed did not pose a risk to the wild stocks before proceeding.

Background to Development of Agreements

Resolution to Minimise Impacts from Salmon Aquaculture on the Wild Salmon Stocks (the "Oslo Resolution"), CNL(94)53

10. In 1991 the Council adopted Guidelines to Minimise the Threats to Wild Salmon Stocks from Salmon Aquaculture as a basis for the development of voluntary or mandatory guidelines by the Parties. In 1993, the Council recognised that new information on the impacts of aquaculture on the wild stocks suggested the need for "stronger measures as a matter of priority". In cooperation with the salmon farming industry, the Oslo Resolution was developed and adopted by the Council in 1994. It was the Council's intention that the Oslo Resolution be fully implemented by 1998. In 1998, recognising that further progress would be necessary to achieve this aim, the Council adopted an Agreement on Implementation of the Oslo Resolution, CNL(98)42. This Agreement states that in order to have confidence that the wild stocks are protected from irreversible impacts the measures in the Oslo Resolution should be fully implemented and stronger measures should be considered where appropriate. Furthermore, the Agreement states that there is a need to reduce escapes and to develop guidelines on physical containment measures; that sterile salmon might offer a way forward to protecting the genetic integrity of the wild stocks and that emphasis should be given to the use and effects of wild salmon protection zones. It was further noted that gene banks, though expensive, can be of value as a measure to protect the genetic diversity of the wild stocks.

Guidelines on Containment of Farm Salmon, CNL(01)53

11. During 2000 and 2001 the Liaison Group between NASCO and the North Atlantic salmon farming industry developed Guidelines on Containment of Farm Salmon which were agreed by the Council at its Eighteenth Annual Meeting in 2001. In agreeing the guidelines, the Council stressed that these would need to be reviewed and updated on a regular basis to take account of new technology and better information on impacts on wild stocks. The Liaison Group was asked to monitor the development of the action plans envisaged under the guidelines and their implementation and advise the Council of progress on an annual basis.

Guidelines for Action on Transgenic Salmon, CNL(97)48

12. In 1997, in response to concerns that the use of transgenic salmon may lead to irreversible genetic changes and ecological interactions, the Council adopted its Guidelines for Action on Transgenic Salmon. These recommend that the Contracting Parties take all possible actions to ensure that the use of transgenic salmon, in any part of the NASCO Convention area, is confined to secure, self-contained, land-based facilities. It should be noted that the guidelines also recognise that there might be benefits from the use of transgenic salmon if, for example, transgenic salmon could not interbreed with wild salmon. At present there is no commercial on-growing of transgenic salmon in the North Atlantic but transgenic Atlantic salmon and rainbow trout broodstock are presently being reared in eastern Canada. When the Guidelines were developed there was ongoing work by the Parties to the Convention on Biological Diversity in developing a Protocol on Biosafety and the guidelines recognise the need to take account of this work. This Protocol, the Cartagena

Protocol, has now been adopted so the SCPA may wish to consider the need to propose amendments to paragraph (c) of the guidelines to reflect this.

NEAC Resolution to Protect Wild Salmon Stocks from Introductions and Transfers, NEA(97)12

13. In 1995, the North-East Atlantic Commission had recognised that introductions and transfers "pose genetic, ecological and disease and parasite risks to the wild Atlantic salmon" and that "the damage can be so severe as to render certain wild salmon stocks extinct". It had been noted that the introduction and spread of diseases and parasites strongly suggested the inadequacy of the arrangements existing at the time, whether because of the nature of these arrangements or because of lack of implementation. In response to this situation the Commission adopted the Resolution to Protect Wild Salmon Stocks from Introductions and Transfers in 1997. One issue that had been raised at the time of the development of this Resolution was the possible conflict between measures to protect wild stocks from the impacts of introductions and transfers and international trade agreements. However, representatives of the World Trade Organization (WTO) indicated that WTO procedures would only be likely to apply in the event that NASCO was unable to resolve a dispute internally, or where the dispute was between a NASCO and a non-NASCO party. Even in the latter disputes, WTO would consider that NASCO's agreement represents an international standard.

North American Commission Protocols for the Introduction and Transfer of Salmonids, NAC(92)24 as revised by NAC(94)14

14. Concern about the introduction of new salmonid species to the eastern seaboard and Great Lakes was raised by the Commission at its First Annual Meeting in 1984. A Scientific Working Group (SWG) was established which developed the NAC Protocols adopted by the Commission in 1992 and amended in 1994. The intention was that the members of the Commission would take steps to implement the provisions of the revised Protocols in their respective domestic laws, regulations or policies. The Protocols included provision for amendment every two years, and in 1996 it was agreed that the Protocols be reviewed and simplified. In 1998, a discussion document proposing revisions to the Protocols was tabled. These proposals included consolidation of the two protocol documents, a shift from geographic zones to a river basin classification system, use of protected zones rather than exclusion zones, increased emphasis on risk analysis and new protocols addressing transgenics. In 2002, Canada adopted a new policy entitled "National Code on Introductions and Transfers of Aquatic Organisms". This Code provides a national framework for the transfer of aquatic organisms that will ensure that there is a single, standard set of risk assessment and approval procedures concerning introductions and transfers of aquatic organisms in Canada so as to minimise negative impacts on aquatic resources and their habitats and on aquaculture, and ensure that Canadian risk analysis procedures are consistent with international standards and commitments. The proposed modification of the NAC Protocols will take into account this new National Code. It was the intention that revised draft Protocols be available for review by the SCPA but these have not, to date, been provided to the Secretariat. In the absence of details of revisions to be made, it is not possible to assess consistency with the Precautionary Approach.

Consistency with the Precautionary Approach

Principles of the Precautionary Approach

15. Under a Precautionary Approach the present generation has an obligation to safeguard the right of future generations to the resource through avoidance of irreversible changes. There is also a need to identify undesirable outcomes and measures that will avoid or correct them. In relation to introductions and transfers, aquaculture and transgenics, undesirable outcomes would include the introduction and spread of infectious disease agents, intra- and inter-specific ecological interactions that adversely impact on the wild stocks, and reduction of genetic diversity of the wild stocks. Clearly, irreversible changes to the wild salmon stocks are highly undesirable outcomes. The FAO Technical Guidelines for Responsible Fisheries note that a strictly Precautionary Approach would not permit deliberate introductions and would take strong measures to prevent unintentional introductions because of the high probability of irreversible changes and unpredictable impacts. Furthermore, escapes from aquaculture facilities are difficult to eliminate and any species introduced for aquaculture should be considered in the same way as an introduction to the wild. The difficulty or impossibility of reversing an introduction should figure predominantly in the decision process as to whether to allow it. There may also be undesirable socio-economic outcomes associated with decisions concerning introductions and transfers, aquaculture and transgenics, but allowing these factors to dominate could undermine the effectiveness of the Precautionary Approach and the SCPA has previously agreed that it is therefore necessary to give proper emphasis to biological factors since under a Precautionary Approach the priority is to conserve the productive capacity of the resource. In the event that corrective measures are required, these should be initiated without delay and should achieve their purpose promptly. The higher the risk to the stocks, the greater is the need for measures which are designed to achieve their purpose promptly. In these circumstances, where there is a risk of irreversible change to the wild salmon stocks, those proposing the use should, in principle, carry the burden of providing proof that their actions will not adversely affect the resource or lead to irreversible changes.

16. All of NASCO's agreements concerning introductions and transfers, aquaculture and transgenics, with the exception of the Containment Guidelines, were developed prior to the adoption of the Precautionary Approach to salmon conservation and management by NASCO and its Contracting Parties. Nevertheless, the approach adopted in developing these agreements was, in a number of respects, consistent with the Precautionary Approach. For example, at the time each of the agreements was developed there was scientific uncertainty about the nature of impacts but this did not prevent the development of conservation measures. It is consistent with the Precautionary Approach to obtain, as a priority, more information on which to base management decisions. NASCO has encouraged research by the Contracting Parties in order to better understand impacts of introductions and transfers, aquaculture and transgenics and facilitated dissemination of the findings. It is consistent with the Precautionary Approach that the adequacy of the measures in the agreements be re-evaluated in the light of advances in understanding of the impacts and that is now the task for the SCPA. There are also examples in some of the agreements of the identification of corrective measures to apply in the event of an undesirable outcome.

For example, the Oslo Resolution recommends the establishment of contingency plans for disposal of mortalities in emergency situations and the Containment Guidelines recommend development of site-specific contingency plans for use in the event of a significant escape. Furthermore, relevant stakeholders were either directly involved in the development of the agreements or were consulted on the agreements prior to their adoption by the Council or Commissions. This is also consistent with the Precautionary Approach.

Implementation

17. It goes without saying that the measures in the agreements can only be considered to be consistent with the Precautionary Approach if fully implemented. Indeed, as stated in the Agreement on Adoption of a Precautionary Approach, implementation of the measures in the agreements is essential in the light of the Precautionary Approach. The Working Group on the Precautionary Approach noted that none of the agreements developed in relation to introductions and transfers, aquaculture and transgenics are legally binding on the Contracting Parties. This issue was discussed by the North-East Atlantic Commission in 2001 in relation to its Resolution since the returns indicated that there had been some movements into the Commission area and releases of non-indigenous anadromous salmonids which were not permitted under the Resolution. The fact that the Resolution is not binding was identified as a weakness in the system although it was noted that there is a moral and political obligation to adhere to the measures in the Resolution. Furthermore, there are areas of all agreements where the reports by the Parties indicate little or no progress in implementation. These include the introduction of the river classification system and appropriate management measures under the NEAC Resolution, the use of European strains in aquaculture contrary to the NAC Protocols, use of local broodstocks for salmon farming as recommended in the Oslo Resolution, and the small-scale testing and full-scale implementation of some of the measures in Part 4 of the Annex to the Oslo Resolution, such as use of land-based facilities, use of sterile salmon, and aquaculture-free zones. Only the measures in the transgenic guidelines appear to have been fully implemented to date.

18. Given that the measures in the agreements are not legally binding and serve as recommendations to the Parties, decisions as to whether particular measures should be implemented or not should be taken in the light of identification of and thorough evaluation of the potential adverse effects on the conservation of the wild Atlantic stocks and their habitats, i.e. risk evaluation. However, it should be noted that the process of developing NASCO's agreements was, in effect, a risk assessment process based on the available scientific information. Since the time when the agreements were developed, more recent scientific advice would suggest the need for an even more cautious approach. Under a Precautionary Approach, lack of scientific knowledge should not be interpreted as indicating an absence of a risk or an acceptable risk. Such risk assessment might:

- identify any possible adverse effects on the wild stocks and their habitats. Under a Precautionary Approach, the burden of proof should be on the proponent to provide evidence that the proposed action will not adversely affect the wild stocks.
- evaluate the likelihood of the adverse effects being realised;

- evaluate the consequences in the event that the adverse effect is realised;
- evaluate overall risk, e.g. low probability x severe consequences = high risk;
- assess if the risk is acceptable or manageable, recognising the need to consider the interests of future generations and the need to maintain the productive capacity of the resource. Under a Precautionary Approach, the higher the risk from an activity, the greater the need for caution and measures to protect the wild stocks;
- identify pre-agreed measures for corrective action;
- develop evaluation and monitoring systems and take these into account in future decisions;
- where there is uncertainty, seek further information.

19. As an example of the risk assessment approach being applied, it is stated in the NEAC Resolution that movements of live salmonids from a zone where a specified disease occurs to a zone free of that disease should not be permitted. Some movements between such zones have, however, been reported but only where there had been no report of the specified disease for many years and there were strict requirements concerning the movements. The risk was, therefore, assessed to be low and the movement between zones permitted.

Adequacy of measures

20. The 1997 Working Group on the Precautionary Approach noted that, even if fully implemented, the agreements developed by NASCO in relation to introductions and transfers, aquaculture and transgenics could "fall short of the full requirements of a Precautionary Approach because they do not ensure a minimal risk of irreversible change, including genetic and ecological impacts, and the introduction of diseases and parasites, and do not adequately place the burden of proof".

21. Two examples might serve to illustrate this. Firstly, in 2002, Norway drew attention to the very serious and continuing threat posed to wild Atlantic salmon stocks by the parasite *Gyrodactylus salaris*, and stressed that prevention of its further spread within the Commission area must be a priority. Norway highlighted the fact that, despite the measures in the NEAC Resolution, infections of *G. salaris* have occurred in new regions. The Commission supported a proposal from Norway to establish a dialogue on the need to prevent further spread of the parasite; on the need for enhanced cooperation on monitoring, research and dissemination of information; on the need to strengthen national legislation; and on the need to revise the NEAC Resolution to take account of current knowledge and the Precautionary Approach. Any activity that could result in the further spread of this parasite poses an extremely high risk of irreversible damage to the wild stocks and yet the measures in the Resolution have failed to prevent its spread. There is, therefore, a feeling within the Commission that, at least with regard to the measures in relation to *G. salaris*, the Resolution may not be consistent with the Precautionary Approach. Secondly, there is the issue of containment of farmed salmon. The Oslo Resolution and the Containment Guidelines contain a number of measures (many in common) intended to minimise escapes of farmed salmon. However, as the Working Group on Implementation of the Oslo Resolution noted in 1998, "the problem of improving containment is that with current farmed production at a level in excess of 400,000 tonnes, an escapement of only 1% leads to a significant proportion of farmed salmon in the wild" and "physical

containment measures cannot ever be 100% effective. The cost of increasing the percentage containment can be prohibitively high". Since that time production has increased to more than 700,000 tonnes and, in spite of the actions in recent years by the industry to reduce escapes, there is still a very significant problem that, in the light of recent scientific research, we know poses a risk of irreversible damage to the wild stocks.

22. Thus the NASCO agreements, even if fully implemented, may be considered in some respects to fall short of the requirements of the Precautionary Approach because some of the measures in them do not adequately protect the needs of future generations, do not avoid irreversible changes, do not identify undesirable outcomes and corrective measures, do not give priority to conserving the productive capacity of the wild stocks and do not ensure appropriate placement of the burden of proof. Perhaps the transgenic guidelines are the most consistent with the Precautionary Approach. They have been fully implemented to date, they recognise the need for further understanding of the impacts of transgenics on the wild stocks but they only permit rearing of transgenic salmon in "secure, self-contained land-based facilities". The terms "secure" and "self-contained" are not defined and escapes are known to occur from existing land-based smolt-rearing facilities. This aspect was a concern to the Working Group on the Precautionary Approach which noted the difficulty of ensuring the high level of containment required for the rearing of transgenic salmon and suggested that the use of sterile salmon in relation to containment of transgenic salmon be reviewed. The guidelines request the Parties to provide details of the proposed method of containment. In view of the potential risk of irreversible change to the wild stocks, to be consistent with the Precautionary Approach the burden of proof should be on the proponent wishing to rear transgenic salmon to prove that the proposed containment measures will prevent any escape. As noted in the NEAC Resolution there should be a strong presumption against any activity which would risk introduction of transgenics to the wild.

Unintentional Introductions and Transfers

23. Unintentional introductions and transfers of aquatic species may occur *inter alia* in ships' ballast water, as a result of engineering work in aquatic environments, in containers used to transport live fish or their ova, on fishing equipment and as a result of the release of live bait. For example, it is estimated that 10 billion tonnes of ballast water are transferred globally each year, potentially introducing aquatic species to new environments. An example is the transfer of the zebra mussel to North America from Europe. These introductions and transfers are not subject to any scientific evaluation or permitting process and, as such, must be considered to be inconsistent with the Precautionary Approach. The SCPA has previously stressed that, under a Precautionary Approach, all resource use should be subject to a management regime and, to be consistent with the Precautionary Approach, measures should be developed to reduce the risk of unintentional introductions and transfers and to minimise their impact when they occur. Once a species has been introduced to an aquatic environment it may not be possible to eradicate it. Neither the NAC Protocols nor the NEAC Resolution contain measures to protect the wild stocks from unintentional introductions and transfers, although the NEAC Resolution recognises the need to take steps to limit the risks by developing information to increase awareness of these risks. The risks to the wild stocks have been highlighted by the parasite *G. salaris,*

which was not known to be a serious threat to wild Atlantic salmon prior to its inadvertent introduction to Norway with stock movements for aquaculture and subsequent dispersal by stocking, escape of infected fish from hatcheries, exchange of water and dumping of moribund fish during smolt transportation, and wild fish moving through brackish water into uninfected rivers.

Possible additional measures

24. The question then arises as to what additional measures might be considered to ensure greater consistency with the Precautionary Approach. The Agreement on the Implementation of the Oslo Resolution provides some guidance in relation to impacts of aquaculture. The two main concerns currently are genetic impacts of escapes and the impacts of sea lice on wild stocks. The Agreement on Implementation of the Oslo Resolution states that sterile salmon might offer a way forward to protecting the genetic integrity of the wild stocks and although there could be disadvantages to the industry these would need to be balanced against the high risks to the wild stocks from existing practices. This has also been suggested as a measure to prevent adverse impacts of transgenics given the problems of ensuring physical containment. The Agreement also states that emphasis should be given, as appropriate, to the use and effects of wild salmon protection zones since such zones could reduce genetic and disease and parasite impacts. Several scientific meetings have recommended these two approaches to minimising impacts on the wild stocks. Both of these measures are included in the Oslo Resolution as subjects for research, small-scale testing and full-scale implementation. To date, there has been very limited progress in implementing either measure and the SCPA may wish to consider if these measures might need to be given greater prominence in the Oslo Resolution. The current NAC Protocols also propose the use of sterile salmonids in some situations and of exclusion zones of various sizes around the different classes of salmon rivers.

25. Land-based units have also been proposed as a method of minimising genetic and disease and parasite impacts, although these are not currently economically viable. While progress has been made in controlling sea lice, measures will need to be increasingly effective as the industry continues to grow, with effective coordinated treatments, fallowing, year-class separation and transparent monitoring of lice levels.

26. In short, it might be concluded that a fully precautionary approach to containment, so as to protect genetic diversity, might involve rearing throughout the life-cycle in secure land-based facilities or a combination of rearing to smolt stage in secure land-based units with on-growing of sterile salmon in the sea (provided that such fish do not present other hazards) in combination with improved diseases and parasite monitoring and treatment. Such a scenario would obviously significantly affect the price of farmed salmon and may not be politically realistic; nonetheless, these costs would have to be balanced against the threat of irreversible damage to the wild stocks.

27. The latest scientific research also indicates that stocking with non-native fish (i.e. from another river, even if a neighbouring river) may be as damaging to the native salmon population(s) as repeated intrusions of farmed fish and should be actively discouraged. While the Oslo Resolution, the NAC Protocols and the NEAC Resolution contain some recommendations in relation to stocking practices, these recommendations may need to be revised in the light of the latest advice. The

Council had previously recognised that there might be benefits from the development of internationally agreed guidelines on stocking and it was agreed that this aspect be considered when the SCPA considers stock rebuilding programmes.

28. The Agreement on Implementation of the Oslo Resolution also highlights the role gene banks may play in protecting the genetic diversity of wild stocks threatened with loss. The Council has developed guidelines on the establishment of gene banks and they have been established in a number of countries, but there is no reference to their application in the Oslo Resolution.

29. It has been proposed that tagging of farmed salmon might assist in identifying fish which have escaped from farms, in identifying farms with particular containment problems, and in evaluating the effectiveness of the containment measures taken. However, to be of value there would need to be a means of adequately sampling escaped transgenic fish. Tagging may also provide a method to further investigate the hypothesis that escaped salmon from the UK, Ireland and Faroes migrate to Norwegian and Russian waters and enter rivers in these countries.

30. To be consistent with the Precautionary Approach, introductions or transfers that pose a risk of irreversible change to the wild stocks should be controlled. Measures concerned with preventing the spread of diseases and parasites usually require that a disease or parasite agent be identified before it can be considered a risk to the wild stocks. The consequences of disease and parasite introductions and transfers cannot be predicted if the agent responsible is unknown but they can be severe. *G. salaris* was unknown as a serious parasite of Atlantic salmon before its introduction to Norway. The SCPA might wish to consider if additional measures could be developed to reduce the risks of introductions of diseases and parasites that are presently not known to adversely affect Atlantic salmon. It is vitally important that the further spread of the parasite *G. salaris* is prevented.

31. The International Maritime Organization's Marine Environment Protection Committee is developing new regulations for ballast water management which it is anticipated will be adopted at a diplomatic conference in 2004. The SCPA may wish to recommend to the Council that the Parties support this initiative.

32. There may be benefits from the development of educational material to increase awareness of the risks from unintentional introductions and transfers as proposed in the NEAC Resolution. The SCPA might wish to consider whether it wishes to recommend to the Council the development of such materials and whether additional steps might be taken.

Reporting Procedures

Oslo Resolution

33. In 1995 the Council agreed a simple format for reporting details of the measures taken under the Oslo Resolution. This format was used in 1996 and 1997 but in 1998 the Council agreed that more comprehensive information on the measures taken should be provided on an annual basis. A new format was agreed which requested information for each of the approximately 40 measures detailed in the Annex to the

Resolution, and this has been used annually since 1998. The returns made by the Parties are collated by the Secretariat and details of new measures are presented annually to the Council. In addition, during the period 1999-2001 the Contracting Parties reported to the Council on the measures taken to minimise impacts of aquaculture, through Special Liaison Meetings to which the industry was invited. The reports of these meetings are contained in document CNL(01)69. The reporting requirement under the Oslo Resolution is, therefore, comprehensive although the scope of the information provided by the Parties varies considerably. It should also be noted that some of the measures taken nationally are considered by the Parties to be "good industry practice" and no further details are therefore reported. The Council had asked that, for each measure reported, the Contracting Parties advise on whether or not the measures are mandatory and how they are enforced. To date, very limited information has been provided by the Parties on these aspects.

Guidelines on Containment of Farm Salmon

34. At the Liaison Group's 2002 meeting, verbal reports were made on progress in developing and implementing action plans on containment of farm salmon. The reports indicated that each country had begun the process of implementing action plans, although it was recognised that each country would inevitably proceed at different speeds with implementation. Progress had been made in the establishment of reporting procedures following an escape, although no details of numbers were provided. The Group agreed that there was a need for a systematic process for reporting on implementation of these action plans and a format for reporting was agreed which was subsequently endorsed by the Council of NASCO. The first returns according to this format should be made available to the Liaison Group at its meeting immediately following the SCPA meeting. There may be a need to review the adequacy of this reporting procedure.

Guidelines for Action on Transgenic Salmon

35. Under the guidelines, the Parties should advise the Council of any proposal to permit the rearing of transgenic salmonids and provide details of the proposed method of containment and other measures to safeguard the wild stocks. No reporting format has been agreed but the President seeks a report, usually given verbally, from each Party at the Council's Annual Meeting. Under the NEAC Resolution there is a requirement for the members of that Commission to report, according to an agreed format, any proposals for the release of transgenic salmonids to the environment (including their use in aquaculture). The SCPA might wish to consider if there should also be a simple formal reporting procedure to the Council in relation to the guidelines which could be incorporated into the annual request for information from the Parties. A draft format is contained in Annex 1.

NEAC Resolution

36. In 1999, the Commission adopted a format for reporting actions taken in accordance with the Resolution and returns have been made annually by the Parties since 2000 using this format. The format requests a response in relation to each measure in the Resolution, leading to comprehensive reporting by each Party. The Secretariat intends to propose to the Commission some minor amendments to this reporting

format in June so as to simplify reporting. Furthermore, in 2000 it was noted that the Resolution does not include a definition of "non-indigenous". This issue will be considered further by the Commission in June. Adoption of a definition should improve consistency in returns.

NAC Protocols

37. The SWG has maintained an inventory of salmonid introductions and transfers in Eastern North America since 1986 based on information provided by federal, state and provincial agencies. In this way introductions and transfers could be evaluated for conformity with the Protocols. Some problems in obtaining information for the inventory were reported in some years. Concern was expressed by the Commission about the use of European strains in aquaculture contrary to the Protocols. The SWG has also established databases of fish disease occurrence and the occurrence of farmed salmon escapes and rainbow trout in salmon rivers.

Conclusions

38. An outside observer might conclude that the only agreement that is close to satisfying the requirements of the Precautionary Approach is the agreement on transgenic salmon. It has been fully implemented to date, it identifies an undesirable outcome that could be irreversible and ensures that such an outcome is unlikely, although it does not specify the details of the requirements for containment. The other agreements might be considered to fall short of the requirements in various ways, not only because of lack of full implementation but because they still permit a very significant risk of irreversible damage and do not ensure appropriate placement of the burden of proof. Measures to minimise the risks from unintentional introductions and transfers are not addressed. However, comprehensive reporting procedures are now in place for all the agreements, other than the transgenic guidelines.

39. Measures to put these elements right could be complex and costly. The salmon farming industry would have to make significant changes to its practices. However, after a period of denial by the industry of any impact on the wild stocks, there is now improved collaboration between wild and farmed salmon interests and a willingness to work together to conserve wild stocks. This progress will need to be maintained and further enhanced. There may also be a need for further measures concerning movements of salmonids and, in particular, enhanced cooperation between the Parties in order to minimise the risks posed by *G. salaris* and to control unintentional introductions and transfers.

40. Put in its starkest terms, the alternative to stronger measures may be irreversible damage to wild populations and loss of genetic diversity. Such an outcome, which may already be occurring, would surely lead the outside world to conclude that NASCO and its Contracting Parties had failed to adequately apply the Precautionary Approach.

Secretary
Edinburgh
26 February, 2003

Annex 1 to SCPA(03)3

Draft Reporting Format in relation to the Guidelines for Action on Transgenic Salmon

1. Have there been any proposals to permit the rearing of transgenic salmonids since the last notification? If yes, please provide details.

2. If there have been proposals to permit the rearing of transgenic salmonids, please provide details of the proposed method of containment and other measures to safeguard the wild stocks.

3. Has any research been undertaken to improve knowledge on the potential impacts of transgenic fish on the wild stocks and their habitat? If yes, please provide details.

4. Have any other relevant actions been taken (e.g. to advise the salmon farming industry of the potential risks to wild stocks from transgenic salmon; to examine the trade implications associated with transgenic salmon; to implement the Protocol on Biosafety?). If yes, please provide details.

SCPA(03)10

Report by Canada to the Standing Committee on the Precautionary Approach

Introduction

Canada's focus in analyzing NASCO documents is to ensure that they bolster current domestic fisheries management and aquaculture development policies and regulations. Canada is committed to conservation of wild fish stocks and to enabling the sustainable development of the aquaculture industry. Canada's first priority is conservation. Canada's decisions are guided by important legislation concerning Aboriginal Fisheries, Species at Risk and ecosystem-based management.

Canada endorses the Precautionary Approach. At a time when a number of international organizations are considering how to apply the Precautionary Approach to their respective mandates, Canada is currently engaged in a government-wide exercise to finalize the application of the Precautionary Approach for use by all departments. Canada has adopted a risk assessment approach to managing its resources. The Precautionary Approach is a distinctive part of the risk management approach that primarily affects the development of options and decision-making. It is ultimately guided by judgment, based on values and priorities. The Precautionary Approach is applied where there is a risk of serious or irreversible harm and there is scientific uncertainty. The Precautionary Approach recognizes that the absence of full scientific certainty shall not be used as a reason to postpone decisions. This applies to all parts of the Canadian government in resource management decisions.

Overall, NASCO's guidelines and protocols are consistent with the spirit of the Precautionary Approach. However, each country is guided by its own governance. Canada's input into the Precautionary Approach in general will be guided by our national definitions and policies.

North American Commission (NAC) Protocols on Introductions and Transfers

In 2002, Canada published its National Code on Introductions and Transfers of Aquatic Organisms. This Code was endorsed by all 13 of the provincial and territorial governments and the federal government and is based on respective legislation. The provisions of the Code are applicable to all aquatic species and apply to both wild and cultured organisms. In Atlantic Canada, the federal department of Fisheries and Oceans (DFO) chairs the Introductions and Transfers Committees and all provinces have membership on their respective committees. There are two committees in Quebec (they cooperate fully and have interlocking membership); Quebec chairs the freshwater committee and DFO chairs the marine committee.

Applications to introduce or transfer aquatic organisms are subject to a standardised approach for evaluating the risk of genetic, ecological and disease impacts on native species in the proposed receiving waters. The Risk Assessment procedure is written into the Code and is based on internationally accepted principles and standards.

Canada has adopted the Precautionary Approach as an integral part of ecosystem management. The NAC Protocols must be consistent with and satisfy the risk assessment requirements of the National Code. Canada is currently implementing the Code as the basis for managing introductions and transfers. The National Code is more inclusive than the NAC Protocols as it considers all species and is not restricted to salmonids. For example, in the re-introduction of species, the Code would examine all impacts on resident species whereas the NAC Protocols would only look at the impact on salmonids. The Code provides for consultation, between provinces and between Canada and/or France and the United States, if proposals might have an impact on stocks within a watershed that extends beyond the boundaries of the receiving province. Canada would invite the development of a bilateral agreement with the United States to consult on proposals to introduce or transfer aquatic species that may impact wild salmon stocks in the others' waters. ICES and the International Joint Commission (via the Boundary Waters Treaty Act) are other venues for consultation.

Resolution to Minimise Impacts from Salmon Aquaculture on the Wild Salmon Stocks (the Oslo Resolution)

Canada is currently in the process of compiling data for the annual report to NASCO.

All applications to establish an aquaculture facility in Canada are subject to a full review by both federal and provincial agencies. Applications are normally reviewed under the Canadian Environmental Assessment Act and the Navigable Waters Protection Act. This process ensures input from all interested parties and requires detailed analysis of all factors to address issues prior to the cage being placed in the water. The process ensures that the potential impact of the establishment of the enterprise is fully evaluated and, if needed, mitigation procedures are developed.

In order to reduce the potential for escape and interaction with wild stocks, the industry, in conjunction with governments, have developed a set of best management practises. These agreements on management practises are voluntary. They are comprehensive, covering all aspects of aquaculture operations including escape prevention. Provinces, who have the responsibility, use these as a condition of licensing. The federal and provincial governments are collaborating with industry to ensure standards are in agreement with provincial and federal legislation.

Guidelines for Action on Transgenic Salmon

There is only one company actively engaged in research on transgenic Atlantic salmon in Canada. All of the research is being conducted in a contained, land-based facility that has been inspected by both the federal departments of Fisheries and Oceans (DFO) and Environment Canada. Canada has not received any request to place transgenic salmon in a cage facility. Any application to do so would be subject to review under the Canadian Environmental Protection Act. This would include a comprehensive risk assessment. DFO will be part of the review, if it is ever required. Canada's position remains that until a comprehensive risk assessment has been conducted, fully fertile, transgenic aquatic organisms should remain in contained, land-based facilities. One consideration, as part of that risk assessment, might be the potential to ensure sterility of transgenic fish as a means of biological containment. In terms of environmental impact, an option might be to have sterile transgenic fish in sea cages.

The regulation of transgenic organisms is also being examined in a number of international fora including under the Convention on Biological Diversity and its Cartagena Protocol on Biosafety. The results of these discussions will form the basis of a national policy, which will be generally applicable to trade in all transgenic organisms.

Guidelines for Containment of Farm Salmon

In Canada, guidelines for containment are specifically outlined in broader best management practises. These are being driven by an industry-led process in cooperation with provincial and federal agencies. They are designed to ensure compliance to both provincial and federal legislative authorities. To ensure compliance, jurisdictions are making best management practises a condition of licensing.

The following best management practises apply throughout the NASCO area. Where applicable, they are consistent with the Salmon Liaison Group's recommendations on Codes of Containment:

- Best Management Practices for Sustainable Aquaculture in Freshwater (Quebec)
- Environmental Management Guidelines - Aquaculture Association of Nova Scotia
- Code of Containment for Use of Non-Local Salmonid Strains in Sea Cage Aquaculture in Bay d'Espoir and Marine Cage Culture Code of Practice for the Newfoundland Salmonid Aquaculture Industry
- Bay Management Agreement, Fish Health Surveillance Program, Environmental Management Guidelines (New Brunswick)

Conclusion

From our perspective, Canada has made significant progress in the four elements outlined above. In most areas, work is well underway and we have set up a governance structure to oversee application of the Precautionary Approach. At this time Canada feels that we should focus our collective energies towards examining the reasons behind the decline of wild salmon stocks. Research into issues of salmon at sea mortality, abundance enumeration, and the interaction between wild and cultured fish are examples of areas that require work.

SCPA(03)11

European Community Report to the Standing Committee on the Precautionary Approach on the Implementation of Resolutions, Protocols and other Agreements Relevant to Introductions, Transfers, Aquaculture and Transgenics

Introduction

At the meeting of the Standing Committee on the Precautionary Approach, Contracting Parties have been requested to examine the various agreements and measures established in NASCO in the context of the application of the Precautionary Approach to introductions and transfers, aquaculture and transgenics.

The European Community has examined each of the five NASCO measures and has come to conclusions on how these measures have been implemented since their inceptions, as well as a number of recommendations on how these measures can be improved. The Community has examined the consistency of these measures with the Precautionary Approach, particularly in view of developments which have taken place within NASCO during recent years.

The Community, in its examination, has been particularly aware of the need for NASCO to retain a degree of credibility with the farmed salmon sector, in order to ensure that there is continued cooperation with the wild sector.

Examination of NASCO measures

CNL(94)53 Resolution by the Parties to the Convention for the Conservation of Salmon in the North Atlantic Ocean to Minimise Impacts from Salmon Aquaculture on the Wild Salmon Stocks (The Oslo Resolution)

The Oslo Resolution applies to all aspects of salmon aquaculture, including ‘farming’, ‘ranching’ and ‘enhancement’. It therefore addresses many, but not all, issues relating to ‘introductions’ and ‘transfers’ of salmon. The European Community considers that this Resolution provides a useful outline structure but does not fully address all the issues of concern to the SCPA relating to ‘Introductions, Transfers, Aquaculture and Transgenics’. The Resolution might therefore be expanded to provide an over-arching framework within which more detailed management protocols (for NAC and NEAC areas) and guidelines could be operated. This expansion of the Resolution could be addressed in part by taking on board some of the principles currently included in the NAC Protocols (NAC(94)14) and NEAC Resolution (NEA(97)12), while some of the detail could be placed in a set of guidance documents appended to the Resolution.

The Community considers that Guidelines appended to the report could be used by Contracting Parties: to support the development of statutory or voluntary regulations; to establish Action Plans; or simply to encourage best practice. The Guidelines could address:

- Risk Assessment: all the current documents refer to risk assessment but provide little guidance on how quantitative (or even qualitative) risk assessments should be conducted in a consistent manner;
- Stocking (i.e. enhancement, restoration, mitigation, rehabilitation): the current documents provide very little guidance on the controls on various types of stocking that might be appropriate; as a result it may be seen by some Parties as unbalanced;
- Transgenics (including GMOs): see comments on CNL(97)48 below;
- Ranching: no guidance is currently provided on ranching although fisheries managers have applied this term to a range of activities, some of which might be seen as more akin to stocking;
- Containment (possibly including 'quarantine'): see comments on CNL(01)43 below.
- Gene banks: see CNL(90)6;
- Habitat: consideration should be given to the potential effects of aquaculture and introductions on the habitat of wild salmon;
- Tagging and marking: consideration has been given to the use of tagging/marking to address problems relating to farm escapes; however, guidance might be provided on the objectives of such programmes and how they might be operated.

This list is not definitive and further guidelines (or fewer) could be introduced as the need was identified.

The language employed in the Resolution is largely consistent with the Precautionary Approach, although there are some areas where it may be seen as a little vague. There are parts of the Resolution in which more detail may be required and others where some of the detail might usefully be placed within the guidance documents.

The Community notes that the Resolution includes definitions which may not be consistent with other NASCO or ICES documents relating to salmon. A list of these definitions, including duplicates, is appended to this report (Appendix 1). The Community considers that a single set of definitions should be agreed and used in all NASCO documents.

The Community notes that considerable progress has been made in the application of the Oslo Resolution, but questions whether this is sufficiently transparent in the reporting procedures currently employed by NASCO. While it would be undesirable to increase the burden of reporting it might be helpful to ensure that a fully updated report on the development was more widely disseminated.

NEA(97)12 Resolution by the North-East Atlantic Commission of the North Atlantic Salmon Conservation Organization to Protect Wild Salmon Stocks from Introductions and Transfers

The guidelines contained in the NEAC Resolution have been implemented by Member States of the European Community through a variety of domestic and European legislation, as well as guidelines and codes of practice developed at national levels.

Introductions of salmon from outside the NEAC area do take place, with salmon ova from Tasmania being introduced to the UK to facilitate year-round production. The broodstock originated within the NEAC area.

There are no plans within the Community to produce transgenic salmon.

Within the Community, Fish Health Inspectorate regimes undertake monitoring and general surveillance operations under domestic and European fish health legislation.

Introductions of non-indigenous fish are regulated by domestic legislation within the Community, e.g. in the UK, the Wildlife and Countryside Act 1981, and the Import of Live Fish Acts.

Domestic and European legislation is in place for the purposes of preventing the spread of diseases and parasites. Live fish or fish eggs may not be moved except between zones of equal status. Additional controls in relation to *Gyrodactylus salaris* are in place for the UK and Ireland. Registration of fish farms is compulsory, and audit trails of all operations must be maintained and be available for inspection.

Although zoning of rivers has not been undertaken, the designation of rivers as Special Areas of Conservation under provisions in the EU Habitats Directive requires coherent management policies to be developed that take into account any activity that may impact upon the species of interest. Catchment management is further promoted through the provisions of the EU Water Framework Directive, which is being transposed into domestic legislation in Member States of the Community.

Guidelines on controlling the unintentional introduction and transfer of aquatic species have not yet been developed.

It is recommended that general measures in the NEAC Resolution and their equivalents in the NAC Protocols be harmonised within a generic Resolution. Specific measures to address the particular issues within the Commissions should be contained within annexes.

NAC(94)14 North American Commission Protocols for the Introduction and Transfer of Salmonids

The European Community has taken due note of the NAC Protocols as implemented by Canada and the United States of America. Comments on the substance of the protocols should be forthcoming from the two relevant Parties. The Community recommends that the most important aspects of the NAC Protocols, common to the NEAC Resolution, be incorporated where possible into the body of the main resolution. The remaining elements should be continued within a separate appendix pertinent only to the North American Commission.

CNL(97)48 NASCO Guidelines for Action on Transgenic Salmon

An EU Directive is in place which regulates all matters relating to the use of genetically modified organisms (GMOs). In the case of Atlantic salmon the rearing of transgenic individuals is prohibited and all Member States have in place regulatory procedures to ensure that this Directive is followed. Having reviewed the NASCO guidelines, the Community agrees that these conform to the Precautionary Approach. However, we recommend that the wording of the guidelines be kept under regular review to ensure that these are adequate to deal with future commercial pressures for wider use of transgenics in some areas of the aquaculture industry.

CNL(01)53 Guidelines on Containment of Farm Salmon

Within the European Community Member States, government and industry in major salmon farming countries (i.e. UK and Ireland) have played complementary roles in implementing the NASCO guidelines on containment. In Scotland an industry-government working group on the issue rapidly led to the development of Codes of Practice on containment and on contingency planning. Similar procedures have been produced by the Irish salmon farming industry. Mandatory reporting of escapes, and the implementation of measures to recover lost fish, have also been introduced in both Scotland and Ireland. There is a requirement for applicants for new fish farms, or renewal of leases, to provide details of containment and contingency plans.

In Scotland, there is little evidence to show that these measures have proved effective in reducing escapes, as numbers remain high. Recovery plans have also proved ineffective. Moreover, not all salmon farms belong to producer organisations. Despite this, there is now a much higher degree of awareness of the extent of the problem. Reports from farms and monitoring of salmon catches in Ireland have shown that the level of escapes remains low. However, it is also apparent that much, if not most, of the escapes occur in small numbers over protracted periods of time as a result of routine farm operations and minor damage to equipment. There is a need to accept that losses of farm stock from cage systems are inevitable. The guidelines, while taking a sufficiently Precautionary Approach, need to acknowledge this. There is thus a need to review the guidelines to ensure that best practice is being recommended and to elaborate more detailed advice to the industry, including adoption of better guidelines to ensure equipment is ‘fit-for-purpose’.

There are doubts as to whether tagging of farmed fish, as currently proposed, would increase our knowledge of either the extent or impact of escapes. More formal risk assessment methods, such as HACCP, could be better used to identify why escapes occur and to develop methods for minimising.

Conclusions

Details of individual recommendations on improvements have been outlined in the various headings set out above. On a general note, the European Community would recommend that a new resolution based on the Oslo Resolution of 1994 should be formulated to take account of more recent developments in NASCO’s consideration of the Precautionary Approach. This resolution would also include elements currently contained within the NEAC Resolution and the NAC Protocols on introductions and transfers, even allowing for future measures to be inserted relevant to the West Greenland Commission. The Community suggests that the remaining aspects, which are pertinent only to an individual regional Commission, would be contained within separate appendices.

The European Community recognised that in order to reinforce the resolutions and protocols, guidelines should be in place to help clarify many of the issues for fisheries managers. These guidelines would cover a range of issues including in particular: risk assessment, stocking (including enhancement, restoration, mitigation, and rehabilitation), transgenics, ranching, containment, gene banks, habitat, tagging and marking. The Community also recommends that definitions used within the various measures applied throughout NASCO should be harmonised. To this end, a list of current relevant definitions is attached (Appendix 1).

Appendix 1 to SCPA(03)11: Definitions Relating to Salmon Aquaculture, Introductions and Transfers and Transgenics

Term	**Definition**	**Source (see below)**
Applicant	See 'proponent' (NAC definition)	NAC(94)14
Aquaculture	The culture or husbandry of aquatic fauna other than in research, in hobby aquaria, or in governmental enhancement activities	NAC(94)14
aquaculture (salmon)	The culture or husbandry of Atlantic salmon and includes salmon farming, salmon ranching and salmon enhancement activities	CNL(94)53
Aquaculture	The farming of aquatic organisms including fish, molluscs, crustaceans and aquatic plants. Farming implies some sort of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc. Farming also implies individual or corporate ownership of the stock being cultivated	FAO*
Competition	Demand by two or more organisms or kinds of organism at the same time for some environmental resource in excess of the available supply	NAC(94)14
Containment	Characteristic of a facility which has an approved design which minimizes operator error to cause escape of fish, or unauthorized persons to release contained fish.	NAC(94)14
country of origin	The country where the species is native	FAO 1996
Diversity	All of the variations in an individual population or species	NAC(94)14
Enhancement	The enlargement or increase in number of individuals in a population by providing access to more or improved habitats or by using fish culture facility production capability	NAC(94)14
enhancement (salmon)	The augmentation of wild stocks in individual river systems by the release of Atlantic salmon at different stages in their life-cycles	CNL(94)53
enhancement stocking	Stocking to supplement an existing stock where the production is believed to be less than the river could potentially sustain but where the reason for this under-stocking cannot be identified. **(see also mitigation stocking and restoration stocking)**	UK SAC 1991
epidemiological zones	Zones free of specific pathogens	NEA(97)12

escaped salmon	Fish that have spent some or all of their life-cycle undergoing propagation and originate from accidental or unplanned releases to the wild	ICES 1996a
Exotic	See 'introduced species' (NAC definition)	NAC(94)14 FAO 1996
farming (salmon)	Production system which involves the rearing of Atlantic salmon in captivity for the duration of their life-cycle until harvested	CNL(94)53
Fish	A live finfish	NAC(94)14
fish culture facility	Any fish culture station, hatchery, rearing pond, net pen, or container holding, rearing, or releasing salmonids	NAC(94)14
Gamete	Mature germ cell (sperm or egg) possessing a haploid chromosome set and capable of formation of a new individual by fusion with another gamete	NAC(94)14
Genetics	A branch of biology that deals with the heredity and variation of organisms and with the mechanisms by which these are effected	NAC(94)14
genetically modified organism (= GMO)	An organism in which the genetic material has been altered anthropogenically by means of gene or cell technologies	FAO 1996
Indigenous	Existing and having originated naturally in a particular region or environment	NAC(94)14
introduced species:	Any finfish species intentionally or accidentally transported or released by man into an environment outside its native or natural range	NAC(94)14
introduced species (= introduction)	Any finfish species intentionally or accidentally transported or released by humans into an environment outside its native or natural range. (Understood to include exotic species)	FAO 1996
Introduction	The intentional or accidental release of a species into environment outside its native or natural range	NAC(94)14
Isolation	Means restricted movement of fish and fish pathogens within a facility by means of physical barriers, on-site sanitary procedures and separate water supply and drain systems and cultural equipment	NAC(94)14
Mariculture	Aquaculture in sea water	NAC(94)14
mitigation stocking	Stocking conducted as a voluntary action or statutory requirement to mitigate lost production due to an activity that cannot be removed. **(see also enhancement stocking and restoration stocking)**	UK SAC 1991
Native	See 'indigenous' (NAC definition)	NAC(94)14
native salmon	Wild salmon which are members of a population with no known effects from intentional or accidental releases	ICES 1996a

naturalized salmon	Fish that have spent their entire life cycle in the wild and originate from parents, one or both of which were not wild or native salmon	ICES 1996a
n_e	Effective population size =4n♂n♀ / n♂+n♀	NAC(94)14
Niche	A site or habitat supplying the sum of the physical and biotic life-controlling factors necessary for the successful existence of a finfish in a given habitat	NAC(94)14
non-indigenous	Not originating or occurring naturally in a particular environment; introduced outside its native or natural range	NAC(94)14
non-indigenous	Any species intentionally or accidentally transported and released by humans into an environment outside its present range	ICES 1994
Population	A group of organisms of a species occupying a specific geographic area	NAC(94)14
Predator	An individual that preys upon and eats live fish, usually of another species	NAC(94)14
Proponent	A private or public group which requests permission to introduce or transfer any finfish within or between countries and lobbies for the proposal	NAC(94)14
Quarantine	The holding or rearing of fish under conditions which prevent the escape or movement of fish and fish disease agents. (For a detailed description of a quarantine facility see annex ix of part ii)	NAC(94)14
quarantined species	Any species held in a confined or enclosed system that is designed to prevent any possibility of the release of the species, or any of its disease agents or any other associated organisms into the environment	FAO 1996
ranching (commercial)	The release of a fish species from a culture facility to range freely in the ocean for harvest and for profit	NAC(94)14
ranching (salmon)	The release of reared juvenile Atlantic salmon with the intention of harvesting all of them on their return	CNL(94)53
Ranching	The production of salmon through smolt releases with the intent of harvesting the total population that returns to freshwater (harvesting may include collecting fish fro broodstock)	ICES 1994
Rehabilitation	The rebuilding of a diminished population of a finfish species, using a remnant reproducing nucleus, toward the level that its environment is now capable of supporting	NAC(94)14
Restoration	The re-establishment of a finfish species in waters occupied in historical times	NAC(94)14
restoration stocking	Stocking which is carried out after the removal of a factor which has been limiting or preventing natural production **(see also mitigation stocking and enhancement stocking)**	UK SAC 1991

Salmonid	All species and hybrids of the family salmonidae covered by the AFS checklist special publication no. 12, a list of common and scientific names of fishes from the United States and Canada (1980)"	NAC(94)14
Species	A group of interbreeding natural populations that are reproductively isolated from other groups	NAC(94)14
Stock	Population of organisms sharing a common gene pool which is sufficiently discrete to warrant consideration as a self-perpetuating system which can be managed	NAC(94)14
Stock	A management unit comprising one or more salmon populations. This would be established by managers, in part for the purpose of regulating fisheries. This term may be used to describe those salmon either originating from or occurring in a particular area. Thus, for example, salmon from separate rivers are referred to as "river stocks" and salmon occurring at West Greenland may be referred to as the "West Greenland stock"	CNL(00)18
stock rebuilding programme	An array of management measures, including possibly habitat improvement, exploitation control and stocking, designed to restore a stock above its conservation limit.	CNL(00)18
stocked salmon	Fish that have had artificial spawning and or rearing techniques applied at some point of their life-cycle and/or originate from intentional releases to the wild	ICES 1996a
Strain	A group of individuals with a common ancestry that exhibits genetic, physiological, or morphological differences from other groups as a result of husbandry practices	NAC(94)14
Transfer	The deliberate or accidental transport of Atlantic salmon within their native or natural range	CNL(94)53
Transfer	The deliberate or accidental movement of a species between waters within its native or natural geographic range, usually with the result that a viable population results in the new locations (See 'transferred species' – FAO 1996)	NAC(94)14
transferred species	Any finfish intentionally or accidentally transported and released within its native or natural geographic range.	NAC(94)14
transferred species (= transplanted species) (= transfer)	Any species intentionally or accidentally transported and released within its present range. (Includes exotic individuals or populations of a species)	FAO 1996
transgenic salmon*	Salmon that contain genes from another organism	CNL(97)48

wild salmon	Fish that have spent their entire life-cycle in the wild and originate from parents which were also spawned and continuously lived in the wild. (This definition favoured by ACFM over that of ICES 1996b)	ICES 1996a
wild salmon	Salmon which originate naturally and have not been subjected to aquaculture	CNL(94)53
wild salmon	A wild salmon is the result of natural spawning and has spent its entire life in nature. (NB WGBAST subsequently agreed to adopt the ICES 1996a definition)	ICES 1996b

Sources for definitions

Abbreviation	**Source**
CNL(00)18	North Atlantic Salmon Conservation Organization. Report of the Standing Committee on the Precautionary Approach – Application of a Precautionary Approach to Management of Salmon Fisheries
CNL(97)48	NASCO Guidelines for Action on Transgenic Salmon
CNL(94)53	Resolution by the Parties to the Convention for the Conservation of Salmon in the North Atlantic Ocean to Minimise Impacts from Salmon Aquaculture on the Wild Salmon Stocks
FAO	FAO definition cited in NASCO/ISFA Liaison Group – Report of the Sub Group on Salmon Co-operation (SalCo-Op)
FAO 1996	FAO Technical; Guidelines for Responsible Fisheries (2). Precautionary approach to capture fisheries and species introductions
ICES 1994	ICES Code of Practice on the Introduction and Transfer of Marine Organisms
ICES 1996a	ICES North Atlantic Salmon Working Group 1996
ICES 1996b	ICES Baltic Salmon and Sea Trout Assessment Working Group 1996
NAC(94)14	North American Commission Protocols for the Introduction and Transfer of Salmonids
NEA(97)12	Resolution by the North-East Atlantic Commission of the North Atlantic Salmon Conservation Organization to Protect Wild Salmon Stocks from Introductions and Transfers
UK SAC 1991	Salmon Advisory Committee, 1991. Assessment of stocking as a salmon management strategy

SCPA(03)6

How does Icelandic legislation conform to NASCO Resolutions?

Introduction

The Contracting Parties to NASCO have been asked to analyse how NASCO agreements concerning introductions and transfers, aquaculture and transgenics conform to the Precautionary Approach and are being incorporated into the legislation in each region. Any difficulties in implementing the measures should be pointed out as well as any amendments needed.

Iceland is only concerned with four of those resolutions, i.e. the Oslo Resolution (CNL(94)53), the Resolution of the North-East Atlantic Commission (NEA(97)12), the NASCO Guidelines on Transgenic Salmon (CNL(97)48) and the Guidelines on Containment of Farm Salmon (CNL(01)53).

When considering these issues it must be borne in mind that most European salmon countries, except Russia and Faroes, are bound by EU laws and regulations as they are passed. Countries outside the EU but inside the European Economic Area such as Iceland and Norway have accepted to take over and adapt EU Directives and Regulations as they emerge. This has certainly influenced newly passed Icelandic laws and will be even more prominent in the future. The same is true regarding laws, which are affected by the agreements of WTO, to which Iceland is a party.

Despite this, there is a bulk of legislation passed by the Icelandic parliament which has not been affected by outside legislation. This is certainly the case with the Salmonid Fisheries Act nr. 76/1970 with later amendments and regulatory measures based on the Act. Many of these actions precede any resolutions passed by NASCO as Iceland has been very concerned with possible negative effects of aquaculture since the late 1980s.

There now follows an analysis of how the current Icelandic legislation conforms to the clauses of the four NASCO resolutions and guidelines.

The Oslo Resolution, CNL(94)53

Articles 1 through 3 describe the aims of the resolution in general terms, which are in good agreement with the general spirit of Icelandic laws and regulations on enhancement and aquaculture. It is thus more meaningful to go to the four parts of the annex which cover the detail of any action.

Part 1 General measures

§ 1-2 Sites and operations

This section discusses siting and operation of aquaculture units as well as the need to control transfers. Although marine fish farms have only recently started operation in Iceland there are a number of provisions in Icelandic laws and regulations to deal with the issue, which has also been described in CNL(01)69. This discussed the special measures taken by Iceland to minimise impacts of salmon aquaculture on wild salmon stocks. That paper can be consulted for greater detail.

The following 2 sections of the Salmonid Fisheries Act enacted in 2001 dealing with a fish farming application, show the concern of the Icelandic management authorities with respect to this issue:

> *"2. The application for an Operating Licence for farming and ranching shall be in a written form, specifying the ownership of the farm as well as the qualifications of the applicant, size of the farm, quantity to be produced, species used, proposed rearing technique, information regarding the status of the project with respect to an Environmental Assessment according to law nr. 106/2000 and the Environmental Licence according to law nr. 7/1998 on Environmental and Food Control. The application shall be accompanied by documents of title for the use of land, water and seawater, a plan regarding the financing of the facility and equipment, operational plan, local building permit, other permits needed for the intended operation as well as any other documents deemed necessary by the Directorate of Freshwater Fisheries.*
> *3. When considering an application for the operation of a fish farm or salmon ranch the Directorate of Freshwater Fisheries shall evaluate potential disease and ecological effects of the fish farm or salmon ranch. If documents provided with the application are unsatisfactory for such an evaluation the Directorate can impose on the applicant to provide further information prior to the issuing of an operating license. Such requirement may include research at the expense of the applicant into potential genetical and ecological threats posed by the proposed fish farm through tagging of fish, compiling of meteorological and oceanographic information. Also compilation of other freshwater fishing as well as farming interests in the area, evaluation of the status of riverine anadromous stocks in the vicinity and the migration of anadromous fish in the proposed farming area."*

§ 3 Transfers

The following section in the Act (Sec. 75) has been devoted to the issue of transfers:

> "*1. Selectively bred salmon can only be used for fish farming operations and the release of such stocks for enhancement or ranching is prohibited. The Directorate of Freshwater Fisheries can issue an exemption to a research organization for small scale release experiments after receiving comments from the Institute of Freshwater Fisheries.*
> *2. The transport of fish species, which are not specified in an operating licence, between unrelated fish farms and ranching stations as well as the transport and release of live fish or eggs between unrelated watersheds is prohibited.*
> *3. The Directorate of Freshwater Fisheries can grant an exemption for the transport of fish species, which are not specified in an operating licence, between unrelated fish farms and ranching stations as well as the transport and release of live fish or eggs between unrelated watersheds after receiving comments from the Veterinary Officer for Fish Diseases and the Fish Disease Committee. The Directorate of Freshwater Fisheries shall consult the Institute of Freshwater Fisheries on the issue, whether the proposed rearing or ranching activity is located in an area, where it could pose negative genetic and/or ecological threats to wild salmonid stocks".*

The issue is also covered in Regulatory Measure nr. 105/2000 regarding transport and release of salmonids and protection against fish diseases and genetic mixing of stocks. The measure has not been updated in English but the provisions regarding transfers are the following:

a) Transfer and Release of Salmon of Wild Origin

- Transfer of wild salmonids and their eggs between watersheds is subject to approval by the Directorate of Freshwater Fisheries. Wild broodfish must be slaughtered and monitored for disease according to specifications from the Fish Disease Committee.
- The Directorate can grant a permission for the use of non-local stocks in rivers with none or small stocks of salmon provided that the effects on nearby rivers are considered negligible.
- The Directorate can also permit transfer of wild salmonids into sea cages and land-based rearing stations with the approval of the Fish Disease Committee.

b) Transfer and Release of Salmon of Reared and Ranched Origin

- Ranching stations can use ranching stocks from approved facilities.
- Reared brood fish, disinfected eggs and juveniles of reared origin can be transferred freely between rearing facilities as long as it conforms to disease regulations.
- Transfer to stations with runoff into rivers must, however, be confined to the species found in the watershed and the approval of the Directorate is needed for the introduction of other species.
- The release of salmonids of foreign origin for enhancement or ranching is prohibited. The Directorate can, however, grant an exemption to a research organization for a period of two years with the approval of the Fish Disease Committee and subject to the tagging of all fish released.

Part 2 Measures to minimise genetic and other biological interactions

§ 4 Design standards for aquaculture units

Although no official standards have yet been set for aquaculture units, work is underway to set such standards. Provisions for setting standards first appeared in the Icelandic laws in mid 2001 and there is as yet no agreement between the authorities and fish farmers on such criteria. The regulations on this issue are closely linked to provisions regarding internal and external inspection of such facilities.

§ 5 and 6 Enhancement and ranching

The issues regarding enhancement and ranching are covered in the Salmonid Fisheries Act. Section 23 of the Act has the following provisions:

"(1) It is obligatory to make a fish cultivation plan reaching over a five years period in every fishing water, where enhancement is planned with fry and smolt-releases, sustenance of angling or through other aspects of enhancement mentioned in 44 (2).

(2) Fish cultivation plan cf. (1) depends upon the consent of the Directorate of Freshwater Fisheries, insofar as a Fishing Association or the majority of fishing right

owners have decided upon such an undertaking. The permit shall contain provisions which the Directorate considers necessary to protect the fish stock in question against diseases and genetic mixing and will be further specified in a Regulation by the Minister.

(3) In the case of a Fishing Association or the majority of fishing right owners in a fishing water wanting to take fish for hatching purposes, it is subject to a permit issued by the Directorate of Freshwater Fisheries. The permit will be valid for a specified period and it shall contain the necessary provisions for the protection of fish stock, cf (1) Section 22.

(4) The Directorate of Freshwater Fisheries is, cf. (1) and (2), enabled to permit the use of ocean ranching stock from the same area of the country for sustenance of angling in a river, subject to the consent of the fishing right owners in said river, as mentioned in (2).

(5) Enhancement of rivers and lakes shall be carried out by using the fish stocks from the same fishing waters.

(6) Transport of salmonids from natural fishing waters, salmon ranching stations or fish farms into natural fishing waters for angling is prohibited.

(7) The Directorate of Freshwater Fisheries can grant an exemption from provisions in (5) and (6) after obtaining an evaluation of the effects of the proposed activity on the aquatic ecosystem of the fishing water in question and nearby watersheds."

§ 7 Salmon farming

The provisions on the genetic interaction of salmon farming are found in sections 72, 75 and 77 of the Salmonid Fisheries Act and are as follows:

(section 72)

"(1) In cases of fish escaping from a certified cage rearing station, it is permitted, notwithstanding the protection of wild fish in the area, to harvest fish at sea within 200 metres of the station, provided it is in common waters outside the netting zone and the Director of Freshwater Fisheries has been notified. Should this happen during the migration period for salmon, the permit is only valid for a period of three days and nights (72 hours) after the escape of the fish, and shall be executed in collaboration with a representative of the Directorate of Freshwater Fisheries.

(2) If a licensed fish farm does not start fishing in accordance with (1) within 12 hours of the notified escape, it is right for the Directorate of Freshwater Fisheries to issue a general fishing permit in the area subject to the terms specified in (1).

(1) The holder of an Operating Licence is obliged to notify the Directorate of Freshwater Fisheries in the event of accidental escapes from cages."

(section 75) See § 3 Transfers.

(section 77)

"The Minister of Agriculture further defines the execution of this chapter through rules and regulatory measures e.g. on issuance of an operating licence, total or partial microtagging of smolts put into sea-cages, use of fish feed, maintenance and renewal of rearing equipment, appraisal of rearing and ranching stations, official inspection of fish farming and ranching activity, movement of fish species between unrelated fish farms and ranching stations, movement of live fish and eggs between unrelated watersheds etc. The Minister of Agriculture can also, after consulting the Veterinary Officer for Fish Diseases, Freshwater Fisheries Committee, the Directorate of Freshwater Fisheries and Institute of Freshwater Fisheries, restrict or prohibit fish farming, ranching or certain types of rearing methods in specific fjords, bays or coastal areas, which are considered exceptionally vulnerable with respect to environmental impact of such activity. Such a decision shall take into account, that the aim of the provision is to protect wild salmonid stocks against negative genetical changes, fish diseases and ecological effects. The decision shall consider the location of the fish farms, their size, distance from salmonid rivers and the value of the angling activity within the area. Also must be considered, whether migrating salmon or trout are likely to migrate close to the fish farms and whether oceanic currents may carry escapees into salmon rivers. The Minister of Agriculture shall also designate certain coastal areas, outside the netting zone, specifically for fish farming and set a production quota in each area."

Part 3 Measures to minimise disease and parasite interactions

§ 8 Control and prevention of diseases and parasites

The Icelandic laws on fish diseases are not available in English but they are to a large extent guided by EU Council Directives. The following could be emphasized:

- In 1985 a new law (no. 61/1985) concerning a "Veterinary Officer for Fish Diseases", was brought into force in responce to changing fish disease risks, as fish farming was expanding and knowledge of such disease increasing. This law was followed by a new regulation in 1986 (no. 403/1986) concerning measures to prevent and control fish diseases and provide health inspection at fish farms.
- In 1986 a new law was enacted establishing the Fish Disease Laboratory as a separate department of the Institute for Experimental Pathology.
- Since 1985 all fish farms in Iceland have been under obligatory and regular fish health surveillance.
- From 1993 Iceland has followed the European Union (EU) regulations and used the requirements laid down in Council Directive 91/67/EEC and the disease control measures provided for in Directive 93/53/EEC as a guideline in the national fish health monitoring system.
- The sampling and diagnostic procedures as given in Commission Decision 96/240/EEC were followed.
- The fish health status in Icelandic aquaculture in general is very promising. The main reasons for that is presumed to be the geographical isolation of the country, strict import policy, secure water supply for the farms and effective fish health surveillance.

§ 9-15 Stocking density to list of diseases

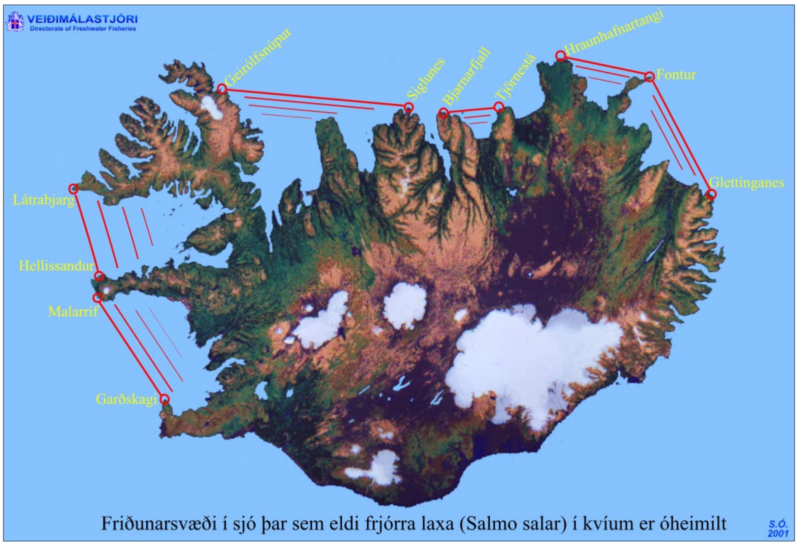
All these items are covered in detail in CNL(01)69 regarding measures to protect wild salmon stocks.

Part 4 Research and development

§ 16 Research, testing and full-scale implementation

(a) Wild salmon protection areas

Wild salmon protection areas have been implemented in Iceland by prohibiting aquaculture of fertile salmon in certain areas (CNL(01)69):



(b) Sterile fish

Sterile salmon have not been used to any extent in Iceland although some research has been carried out, especially on heat and pressure treatment of salmon eggs.

(c) Tagging and marking

The Salmonid Fisheries Act allows provisions regarding tagging of smolts into sea cages both in the licensing process (section 62) and as a provision for a regulatory measure (section 77):

Section 62

"*(4) If the application is deemed satisfactory by the Directorate of Freshwater Fisheries, it can issue an Operating Licence for a 5 year period. The Operating Licence shall specify the size of fish farm or salmon ranch, the type of operation i.e. whether engaged in smolt rearing, ranching, land- or sea-based farming for a part or all of the year. Also species allowed and the permitted quantity of production or release in the case of ranching as well as any obligations on part of the applicant to carry out monitoring or investigations at the farming site. The Operating Licence* *shall also contain conditions regarding precautionary measures to prevent escape of fish during rearing or transport processes and contingency plans to recover such fish. The Directorate can issue a licence for a shortened period and /or limit the allowed size and production quantity of a fish farm and the maximal number released from a salmon ranch. The Directorate can also issue a conditional Operating Licence, which may obligate the licence holder to carry out research at his expense into potential genetical, parasitical and ecological threats posed by the proposed fish farm through tagging of fish and compilation of meteorological and oceanographic information. Also compiling of other freshwater fishing as well as farming interests in the area, evaluation of the status of riverine anadromous stocks in the vicinity and the migration of anadromous fish in the proposed farming area. Also investigations into the fate of escaped farmed salmon through systematic tagging and release from cages, monitoring of nearby rivers for tagged salmon and the monitoring of sexual maturation and health in the cages. Operating Licence can not be issued until a decree has been issued regarding the need of the project to undergo an Environmental Assessment according to law nr. 106/2000, if the facility is potentially subject to such an assessment. The Operating Licence is also subject to a positive outcome from such an assessment and must conform with such a ruling. The Operating Licence can further not be issued until after the issuance of an Environmental Licence according to law nr. 7/1998 on Environmental and Food Control."*

<u>Section 77</u>

"The Minister of Agriculture further defines the execution of this chapter through rules and regulatory measures e.g. on issuance of operation licences, <u>total or partial microtagging of smolts put into sea-cages</u>, use of fish feed, maintenance and renewal of rearing equipment, appraisal of rearing and ranching stations, official inspection of fish farming and ranching activity, movement of fish species between unrelated fish farms and ranching stations, movement of live fish and eggs between unrelated watersheds etc."

The remaining issues in § 16. have been encouraged and some research is ongoing.

Resolution by the North-East Atlantic Commission to Protect Wild Salmon Stocks from Introductions and Transfers, NEA(97)12

Article 1 Movements from outside the NEAC area

- No such movements of Atlantic salmon or their eggs have been permitted in Iceland.

Article 2 Transgenic Atlantic salmon

- Issues regarding transgenic organisms are generally handled by the Ministry of the Environment in Iceland and it seems likely that the policy of the EU will in principle be adopted.
- There has been no attempt to bring transgenic salmon into Icelandic aquaculture and any such activity would be prohibited by the authorities.

Article 3 Movements within the NEAC area.

Specific diseases and parasites

- None of the specified diseases have been observed in Iceland and such zones have thus not been established.

Unknown diseases and parasites

- For information on Icelandic zoning and rules on importation see section 5 of CNL(01)69.
- Importation of salmonids into Iceland even as eyed eggs has rarely been permitted but application for importation of other species is growing. There is always a rigorous inspection at donor facilities by Icelandic disease authorities.

Article 4 Movement of non-indigenous fish

- There have been no movements of non-indigenous fish into Icelandic salmon rivers.

Article 5 Classification of rivers

- One Icelandic river, "Rangá", would fall into group 1 (no sustaining salmon stock).
- All other salmon rivers would fall into group 2 (rivers with self-sustaining salmon stock).

Article 6 Management measures

- Rangá river (group 1) never had a sizeable salmon population and is thus dependent on annual releases of salmon smolts. Smolts from enhancement and ranching have been used.
- Enhancement in other rivers (group 2) is in line with the four items listed under group 2 rivers.

Article 7 Unintentional introductions and releases

- Releases in this category are not known to have happened in Iceland.

NASCO Guidelines for Action on Transgenic Salmon, CNL(97)48

The Icelandic authorities have limited information on this issue, which has not been brought up in Iceland. Iceland otherwise supports the statements in paragraphs a) through f).

Guidelines on Containment of Farm Salmon, CNL(01)53

The Icelandic salmon management authorities are in the process of adopting a standard for the strength and preventive maintenance of sea-cages. Such a standard will be more rigorous than the guidelines set forward by the NASCO Liaison Group. The NASCO guidelines must thus be considered a minimum standard and any regulation set in Iceland will impose a greater responsibility on the fish farming industry with respect to construction and maintenance of sea cages. This is in line with recent developments in Norway and Canada, where authorities are raising the standard for cage constructions. It is hoped that such action plans for Iceland in the form of regulatory measures can be set before the end of 2003.

Conclusions

If one considers the content of the four resolutions and guidelines discussed in this paper, it seems that we have come a long way and NASCO has done a good job in guiding salmon managers around the North Atlantic towards the same goal and focusing on the problems facing the Atlantic salmon. This work has also been much in line with the Precautionary Approach.

It will, however, be difficult to go much further in standardizing legislation and regulations within the NASCO forum. It is well known that none of these resolutions and guidelines have been binding, as various Contracting Parties have wanted the flexibility to go either to less severe or more stringent measures than those agreed. This is also influenced by the fact that national legislation in most European salmon-producing countries, including the European Economic Area such as Iceland and Norway, is being moulded to a greater extent by Council Directives and Regulatory Measures from the EU. Where EU Directives and national legislations are not in agreement, the latter usually has to be changed. With an ever increasing number of non-salmon producing countries within the EU one could possibly also expect less understanding and consideration for wild salmon issues.

It seems, thus, that it might be useful for the Contracting Parties within the EU and EEA to coordinate their views and try to influence various EU legislations, which may affect the Northeast Atlantic salmon resource in the future. Since these Contracting Parties are all members of NEAC, it seems that NASCO could play a role in such consultations. There is a large deal of official consultation taking place between EU and the EEA on fish disease issues, which frequently relate to trade of fish and agricultural items. Such a platform on management and ecological issues has, however, been non-existent (with the exception of NASCO), which is surprising considering the importance of the Atlantic salmon to various stakeholders.

SCPA(03)8

Norwegian Report to the Standing Committee on the Precautionary Approach on the Implementation of Resolutions and Agreements Relevant to Aquaculture, Containment, Transgenics and Introductions

Introduction

The NASCO Council has asked that all its Contracting Parties analyse how NASCO agreements concerning introductions and transfers, aquaculture and transgenics conform to the Precautionary Approach. The analysis should include statements on the extent to which the agreements are being implemented nationally, together with details of any difficulties impeding their implementation, and the need for any additional measures in order to ensure that the agreements are consistent with the Precautionary Approach.

Norway is only concerned with four of the agreements, i.e. the Oslo Resolution (CNL(94)53), the Resolution to Protect Wild Salmon Stocks from Introductions and Transfers, (NEA(97)12), the NASCO Guidelines on Transgenic Salmon (CNL(97)48), and Guidelines on Containment of Farm Salmon (CNL(01)53). As a member of the European Economic Cooperation, Norway will adopt EU directives that may influence the management of wild Atlantic salmon.

Resolution to Minimise Impacts from Salmon Aquaculture on the Wild Salmon Stocks (the "Oslo Resolution"), CNL(94)53

The objective of the Oslo Resolution is to minimise the possible adverse impacts of salmon aquaculture on the wild stocks.

On 25th February 2003 the Norwegian Parliament decided to establish a number of protected zones for Atlantic salmon. The aim is to provide enhanced protection to a number of Norway's most important salmon watercourses and appurtenant migratory areas in fjords and along the coast. In the protected areas the salmon and its habitat will be given priority over any activity that may be harmful to the salmon and its habitat.

In the first phase, 37 so-called National Salmon Rivers and 21 National Salmon Fjords will be established. The Parliament also decided that in the second phase, to be completed in 2004/2005, a number of additional rivers should be designated. This means that when completed the system will include 50 of the most important salmon rivers in Norway. The National Salmon Rivers and Fjords will protect about 2/3 of the total Norwegian wild salmon production.

In addition, the Parliament also asked that a system for tagging of farmed salmon be established as soon as possible. Tagging of farmed salmon could both reduce escapes and make it possible to identify facilities with particular containment problems. This measure can offer benefits to the aquaculture industry in terms of traceability and marketing.

33 stocks of Atlantic salmon are kept in living gene banks in Norway. At present 21 of these stocks are being used for enhancing or re-establishing. Milt from approximately 6 200 individuals from 162 salmon stocks are preserved in frozen gene bank.

Consistency with the Precautionary Approach

The Agreement on the Implementation of the Oslo Resolution provides some guidance in relation to impacts of aquaculture. The two main concerns currently are genetic impacts of escapes and the impacts of sea lice on wild stocks. Also in the future NASCO should give priority to the problem concerning escapes of farmed fish and the measures that could reduce these escapes.

The establishment of protection areas where salmon aquaculture is restricted or prohibited may protect stocks of wild salmon. Norway considers the establishment of protected zones for Atlantic salmon as an important measurement to minimise genetic, disease, parasite and environmental impacts and these should be given priority in the future to improve consistency with the Precautionary Approach. The protected areas should include both the freshwater habitat and the appurtenant migratory areas in fjords and along the coast.

Tagging or marking could be used in order to facilitate the identification of farmed salmon in the wild and their separation from wild fish, to determine the source of escapes and to assess the interactions of escaped farmed salmon with the wild stocks. There are several tagging/marking systems available with different pro and cons and there is a need for evaluation of the possibilities concerning the different tagging methods. Norway considers that tagging of farmed salmon is an important measure in the future and it is suggested that "tagging and marking" is considered to be moved from part 4 "research and development" in the Oslo Resolution to part 2 (measures to minimise genetic and other biological interactions).

Guidelines on Containment of Farm Salmon, CNL(01)53

Guidelines establishing minimum standards applying to the entire aquaculture production chain are under development. These will include measures to prevent escapes from net pens and to control sea lice. The guidelines will be subject to consultations during 2003.

Monitoring of escaped farmed salmon in coastal areas and fjords, in sport fishing catches and in the spawning populations is conducted annually.

Consistency with the Precautionary Approach

Progress had been made in the establishment of reporting procedures following an escape. The NASCO guidelines must be considered a minimum standard and national regulation could impose a greater responsibility on the fish farming industry with respect to construction and maintenance of sea cages.

The limited experience with these guidelines and the fact that the first returns of reporting on implementation of the action plans from each country will be presented in 2003 indicate that a review of the guidelines could be undertaken at a later date.

Guidelines for Action on Transgenic Salmon, CNL(97)48

There are no plans to use transgenic salmonids in Norway. Norway has ratified the Cartagena protocol concerning GMOs under the Convention on Biological Diversity.

Consistency with the Precautionary Approach

The transgenic guidelines are, in our view, consistent with the Precautionary Approach. NASCO's guidelines should adopt the definition of transgenic salmon in accordance with the Cartagena protocol, i.e. salmon that possess a novel combination of genetic material obtained through use of modern biotechnology.

NEAC Resolution to Protect Wild Salmon Stocks from Introductions and Transfers, NEA(97)12

NEA(97)12 states that, in order to protect wild salmon stocks from the damage that can be caused by introductions and transfers, there is a need for measures stronger than those at present in force and that local conditions are a very significant factor in determining appropriate management measures.

Unintentional introductions of aquatic species which may adversely affect wild salmon stocks can occur, for example, in ships' ballast water, with the use of containers for transport of fish, as a result of the release of live bait or on fishing equipment.

The Parties to the Convention on Biological Diversity and the International Maritime Organization (IMO) have also focused on the risks concerning unintentional introduction in ships' ballast water. They both call on Governments and relevant organizations to act to ensure implementation of an instrument to address the environmental damage caused by the introduction of harmful aquatic organisms in ballast water

A provision concerning measurements to prevent the spreading of organisms via ballast water and sediments from ships is at present being prepared in Norway.

Consistency with the Precautionary Approach

The risks to the wild stocks of Atlantic salmon from introductions have been highlighted by the parasite *G. salaris,* which was not known to be a serious threat to wild Atlantic salmon prior to its inadvertent introduction to Norway with stock movements for aquaculture and subsequent dispersal by stocking, escape of infected fish from hatcheries, exchange of water and dumping of moribund fish during smolt transportation, and wild fish moving through brackish water into uninfected rivers. Any activity that could result in the further spread of this parasite poses a high risk of irreversible damage to the wild stocks. There is a need to establish a dialogue on the need to prevent further spread of the parasite; on the need for enhanced cooperation on monitoring, research and dissemination of information; on the need to strengthen national legislation. There is also a need to consider how the NEAC Resolution may be modified to take account of current knowledge and the Precautionary Approach.

If a new intrusive aquatic species establishes itself, appropriate eradication, containment and control measures should be taken in accordance with the relevant provisions of the Convention on Biological Diversity.

Scientific research indicates that stocking with non-native fish (i.e. from another river, even if a neighbouring river) may be as damaging to the native salmon population(s) as repeated intrusions of farmed fish. This suggests the need to revise the recommendations concerning stocking practices. In addition the resolution should also be revisited to see if it could be extended to include Salmonids other than salmon.

SCPA(03)12

Report to the Standing Committee on the Precautionary Approach by the Russian Federation

Application of the NASCO agreements being reviewed has so far been of a limited scope in Russia. To date the following documents are, primarily, applied: CNL(94)53, NEA(97)12, CNL(01)53.

CNL(94)53 Resolution by the Parties to the Convention for the Conservation of Salmon in the North Atlantic Ocean to Minimise Impacts from Salmon Aquaculture on the Wild Salmon Stocks

This Resolution has been only partly implemented as there has been no salmon farming in Russia until very recently. Only some of the measures contained in it have been applied, and in particular, those pertaining to salmon enhancement. Based on our experience of many years in this area, we can conclude that these measures are consistent with the Precautionary Approach. They have been fully implemented and appropriate reporting procedures established.

As for another aspect of this Resolution, salmon farming, we believe that stronger measures should be introduced to reduce escapes of farm salmon, especially in the light of increasing aquaculture production. Enhanced cooperation between the Parties is required, in our opinion, in exchange of information on escapes of farm salmon.

NEA(97)12 Resolution by the North-East Atlantic Commission of the North Atlantic Salmon Conservation Organisation to Protect Wild Salmon Stocks from Introductions and Transfers

This Resolution is, on the whole, consistent with the Precautionary Approach; however, where it pertains to the spread of diseases and parasites, more detailed information should be requested from the Parties in their annual return of information to the Council regarding outbreaks of known and unknown diseases and parasite infections.

CNL(01)53 Guidelines on Containment of Farm Salmon

We are presently implementing these Guidelines through development of our national action plan and licensing system for the salmon farming industry; however, at this stage we cannot provide any evaluation of their efficacy and consistency with the Precautionary Approach as our experience in applying them is rather limited.

CNL(97)48 NASCO Guidelines for Action on Transgenic Salmon

These Guidelines have not yet been applied in practice in Russia as there were no proposals for rearing transgenic salmon. However, we consider it to be consistent with the Precautionary Approach and support the proposal from the Secretariat to include a reporting procedure for this agreement into the annual return of information to NASCO using the format in Annex to the Secretariat's discussion paper.

SCPA(03)7

Report to the Standing Committee on the Precautionary Approach by the United States

Introduction

The United States has reviewed the subject documents for consistency with the Precautionary Approach. As noted by the Secretariat, this was a difficult review to conduct. Our review was conducted by comparing the five documents with the agreements NASCO has already adopted on the Precautionary Approach. Our review identified elements in each of the five documents that incorporated aspects of the Precautionary Approach. These agreements provide very useful guidance and direction for national implementation. Generally speaking, these documents were developed in order to reduce the risk of adverse impacts from aquaculture operations on wild salmon stocks. In developing and implementing these agreements, the Precautionary Approach requires that priority is given to the conservation of wild salmon stocks. In our view, the question of whether these documents are consistent with the Precautionary Approach, as adopted by NASCO, cannot be answered with a simple yes or no. The consistency of these agreements with the Precautionary Approach is best viewed along a continuum – some elements of the agreements and resolutions are more precautionary than others. While it is important to carefully review the contents of each of these documents, the equally or more important aspect is to explore how these have been implemented and to identify areas for improvement. The decision of how precautionary is precautionary enough is very difficult to answer in a generic way. That decision is also influenced by local factors and conditions, most notably the status of wild salmon populations.

US Implementation

Brief summaries are provided below of US implementation of relevant NASCO documents.

CNL(94)53 – Resolution by the Parties to the Convention for the Conservation of Salmon in the North Atlantic Ocean to Minimize Impacts from Salmon Aquaculture on the Wild Salmon Stocks

The Oslo Resolution is intended to minimize the possible adverse impacts of salmon aquaculture on wild stocks. As illustrated by annual returns to NASCO, the US has implemented measures consistent with the Oslo Resolution. Canada and the US have cooperated to develop and implement the NAC Protocols on Introductions and Transfers of Salmonids which include more specific measures within the NAC area.

NAC(94)14 – North American Commission Protocols for the Introduction and Transfer of Salmonids

The US implements the NAC Protocols through conditions placed on permits to move fish or hold them in marine cages. The majority of US Atlantic salmon rivers are classified as Class II watersheds in which one or more of the following conditions occur: the habitat has been altered; non-indigenous wild or hatchery-reared Atlantic salmon stocks have been released; or aquaculture has been conducted in marine cage culture.

The US is in compliance with the NAC Protocols with one exception. The one aspect of the NAC Protocols that the US has been slow to effectively implement is the prohibition in the North American Commission Area on the release or use in aquaculture of reproductively viable strains of Atlantic salmon of European origin, including Icelandic origin. This has been reported within the NAC. We are pleased to report that the ban on importation and use of reproductively viable non-North American strain Atlantic salmon is now contained in a draft discharge permit proposed by the State of Maine Department of Environmental Protection for the discharge from net pens.

CNL(97)48 – NASCO Guidelines for Action on Transgenic Salmon

In accordance with the NASCO Guidelines for Action on Transgenic Salmon, the US has kept the NASCO Council advised of a proposal to the US Food and Drug Administration (FDA) for the rearing of transgenic salmon. This is at an early stage of the application process, so few details are available on the proposed methods of containment or other measures to safeguard wild stocks. The project proponent is required to prepare an environmental assessment and biological evaluation, which will include a risk analysis. The US Fish and Wildlife Service and the National Marine Fisheries Service have advised the FDA that there is a need to conduct a consultation under section 7 of the Endangered Species Act to evaluate the potential impacts of FDA's action on wild salmon stocks.

CNL(01)53 – Guidelines on Containment of Farm Salmon

Within the US, the aquaculture industry, state and federal resource and regulatory agencies, and conservation organizations have collaborated in the development and implementation of a containment system based on a hazard analysis critical control point approach (HACCP). This methodology identifies points in the operation of marine cage culture where losses are more likely to occur (stocking, sorting/grading, harvesting, etc.) and imposes control measures on those activities to minimize the potential for losses. The HACCP plans include inventory controls, equipment and structural standards, and best management practices. Oversight and verification is provided by mandatory logbooks and reporting as well as third party audits. In addition, marking trials are now being conducted and marking of all fish stocked in cages is included in the draft discharge permit proposed by the State of Maine Department of Environmental Protection.

General Recommendations for Improvement

- Increase Specificity: In general, our review indicated that the documents could benefit from greater specificity. The NAC Protocols and NEAC Resolution could be re-examined within the appropriate Commissions to consider areas where recommendations could be more detailed. This review might also identify inconsistencies in terminology that could then be resolved through collaboration. Our review of the Guidelines on Containment identified a large number of very general statements. We understand that the intention of the Liaison Group was that the action plans would include greater specificity. Since progress on action plans has not yet been reported, it is not possible to evaluate their level of specificity and compliance with the precautionary approach.

- Implementation and Reporting: We agree with the Secretariat's recommended format for reporting under the Guidelines for Action on Transgenic Salmon. We also support the recommendation that Parties be more specific in reporting under the Oslo Resolution in distinguishing between voluntary and mandatory measures.

- Risk Assessment: All of the documents include language related to reducing risk and minimizing the potential for adverse impacts on wild stocks. The process for conducting a risk assessment is not identified in any of the documents. One suggestion for improvement could be to include in the report of this meeting a discussion of how a risk assessment should be conducted. While it is unlikely this could be quantitative, a qualitative discussion could be included that would identify the factors to be considered and the outcomes to be avoided.

- Burden of Proof: In general, these documents place responsibility on the Parties to present and review information. It has been noted that a more appropriate placement of the burden of proof is with the proponent of the activity. NASCO may wish to issue a general recommendation to Parties to ensure in implementation that the burden of proof is appropriately placed with the project proponent.

- Improved Scientific Exchange: Under the Precautionary Approach, management is directed to consider all available scientific information. All of the documents include recommendations for research. Improving awareness of ongoing scientific studies and exchange of results as they become available would enhance our ability to implement management measures in precautionary manner. Parties should be encouraged to report any findings related to interactions between wild and farm fish or measures to minimize the potential for adverse effects.

In our view, the above recommendations would improve NASCO's Application of the Precautionary Approach to Introductions, Transfers, Transgenics and Aquaculture. It bears repeating, however, that without effective implementation these agreements will not achieve their stated goals.

SCPA(03)9

Addendum to the Report by the US to the Standing Committee on the Precautionary Approach

The US re-examined the five documents and compared them with the general recommendations for improvement identified in our previous review. These recommendations were as follows:

(1) Increase Specificity
(2) Implementation and Reporting
(3) Risk Assessment
(4) Burden of Proof
(5) Improved Scientific Exchange

All documents would benefit from standardization of terminology. The appropriate placement of the burden of proof applies to all documents. Risk assessment is implied in all of the documents, but the process is not clearly laid out in any one document. We did not attempt to re-write the documents, but rather to identify areas for clarification and improvements in implementation.

CNL(97)48 - NASCO Guidelines for Action on Transgenic Salmon

Adopt Reporting Format, with following clarification:

- The reporting requirement should identify whether the rearing is for research or commercial purposes.

Recommend that the Protocol on Biosafety, developed by the Parties to the Convention on Biological Diversity, be circulated to Parties and reviewed to assess the applicability to the Guidelines (pursuant to (c) in the Guidelines).

Note that provision (e) states that Parties will take steps to encourage research in order to improve knowledge on the potential impacts of transgenic fish on the wild stocks and their habitat. Parties should be encouraged to conduct the necessary research and share results.

Recommend that in applying these Guidelines, the Parties place the burden of proof on the proponent of rearing transgenic salmon.

CNL(01)53 - Guidelines on Containment of Farm Salmon

The Guidelines contain a number of general statements such as “minimize the risk of escapes”, “significant in-built safety margin”, “assess its fitness for purpose,” “contain fish effectively and to minimize the chances of fish escaping,” and “minimize the risk of accidental damage to the equipment.” It is difficult to comment specifically on how precautionary these provisions are given their general nature. One might conclude, therefore, that the Guidelines need to be more specific and prescriptive in nature in order to better comply with the Precautionary Approach. The group that developed these guidelines struggled with these same issues and determined that in order for the Guidelines to be applied in a wide range of jurisdictions and environments they needed to be more general. The Guidelines call for each jurisdiction to draw up a national action plan, or regional action plan, based on these guidelines. The intention was that the action plans would be more specific.

Our re-examination of the Guidelines on Containment identified that they could benefit from incorporation of all of the five recommendations identified above. As noted above, it is very difficult to evaluate how precautionary this document is without more specific language. As noted earlier, the Guidelines require reporting on action plans. It is not possible at this time to evaluate whether the guidelines have been implemented and whether the action plans and reporting procedures contain the necessary specificity to evaluate their consistency with the precautionary approach. The Guidelines could benefit from incorporation of at least a qualitative risk analysis discussion. The development of measures to be incorporated in action plans should incorporate consideration of the status of wild stocks. In order to be consistent with NASCO's adoption of the Precautionary Approach, the Guidelines should clearly place the burden of proof on the proponent of fish farming. Finally, both the NASCO Parties and industry representatives should commit to exchange research findings relative to containment and interactions.

NAC(94)14 - North American Commission Protocols for the Introduction and Transfer of Salmonids

The NAC Protocols contain quite specific language and do clearly identify responsibilities for the proponent. They could benefit from incorporation of consideration of unintentional introductions. The NAC Protocols were designed to minimize the potential for adverse effects on wild stocks from introductions and transfers. As noted by the Secretariat, recent scientific studies have provided additional demonstration that these concerns are well founded.

NEA(97)12 - Resolution by the North-East Atlantic Commission of NASCO to Protect Wild Salmon Stocks from Introductions and Transfers

The preamble of the NEAC Resolution clearly identifies the goals and objectives. Many of the provisions are recommended for consideration, rather than required. The Resolution itself does not contain a great deal of specificity. In viewing only the Resolution without details on implementation, it is difficult to evaluate its compliance with the Precautionary Approach. The burden of proof should be clearly placed on the proponent of introductions and transfers.

The draft Resolution to Minimise Impacts from Aquaculture, Introductions and Transfers, and Transgenics on the Wild Salmon Stocks, the "Williamsburg Resolution", developed by the Standing Committee on the Precautionary Approach, which formed Annex 10 of the Committee's report, is not included here. The Resolution, as adopted by the Council, is contained in Annex 20 (page 197) of this Report of the Twentieth Annual Meeting of the Council.

ANNEX 19

Council

CNL(03)50

Canada's Statement to NASCO on the Adoption of the Williamsburg Resolution on the Precautionary Approach

CNL(03)50

Canada's Statement to NASCO on the Adoption of the Williamsburg Resolution on the Precautionary Approach

For a number of years Canada has been committed to the Precautionary Approach and has put in place mechanisms based on risk assessment and ecosystem considerations to help manage wild Atlantic salmon and aquaculture in a sustainable way.

Canada's approach to fish management and to aquaculture in many respects goes beyond the Williamsburg Resolution and its annexes. For example, our National Code on Introductions and Transfers of Aquatic Organisms provides a framework to address inherent risks associated with movement of fish. The new Species At Risk Act (to be invoked this month) requires recovery plans for endangered species. There is also the Canadian Environmental Assessment Act which provides for the need for assessment of risks to the environment and mitigation and monitoring plans to ensure protection of the environment.

Canada has worked diligently at the Standing Committee on the Precautionary Approach on the development of the Resolution and its various annexes drawing from Canada's current Precautionary Approach and risk assessment policies.

I would like to emphasise our commitment to conserve wild salmon stocks. Our first priority is conservation and over the years we have implemented many measures to protect wild stocks including closure of fisheries.

We fully support the underlying principles of the proposed Williamsburg Resolution as most of its content is derived from policies and current practices that Canadian governments and stakeholders follow.

The recent work on new annexes and the umbrella resolution is a positive development and Canada is committed to finalizing these documents rapidly with a view to reporting on its main aspects at next year's meeting. However, to follow government requirements on consultations Canada needs more time before finalizing recent additions such as the stocking guidelines.

Further, the North American Commission agreed on Wednesday to examine, prior to the next annual meeting, the differences between Canada's Introductions and Transfers Code and the NAC Protocols.

The Williamsburg Resolution ought to be a living document that remains at the leading edge of science and developments, to ensure that new or potential impacts on wild Atlantic salmon stocks are addressed. At the moment, it is imperative that we start from a solid base with which all Parties are comfortable. Canada seeks a general agreement on the principles and direction of the Williamsburg Resolution but at the same time patience on the part of other Parties for us to conclude our mandated consultations.

ANNEX 20

Council

CNL(03)57

Resolution by the Parties to the Convention for the Conservation of Salmon in the North Atlantic Ocean To Minimise Impacts from Aquaculture, Introductions and Transfers, and Transgenics on the Wild Salmon Stocks

CNL(03)57

Resolution by the Parties to the Convention for the Conservation of Salmon in the North Atlantic Ocean To Minimise Impacts from Aquaculture, Introductions and Transfers, and Transgenics on the Wild Salmon Stocks

The Parties,

NOTING the provisions of the Convention for the Conservation of Salmon in the North Atlantic Ocean of 2 March 1982 (the "Convention"), which seeks to promote the conservation, restoration, enhancement and rational management of salmon stocks;

WELCOMING the achievements in salmon conservation by the Parties to the Convention, within the framework of the Convention, and the role of the North Atlantic Salmon Conservation Organization (the "Organization") therein;

NOTING that NASCO and its Contracting Parties have agreed to apply the Precautionary Approach to the conservation of salmon and acknowledging the need for measures taken in accordance with this Resolution to be consistent with the Precautionary Approach;

AWARE of the need for cooperation between the Parties in order to maintain and to restore the wild salmon stocks, and promote sustainable conservation and management of such stocks;

RECOGNISING the benefits, including the socio-economic benefits, which have resulted from the development of salmon aquaculture;

CONSCIOUS of the threats to the wild stocks of salmon from different human activities, including possible adverse effects from aquaculture, introductions and transfers and transgenics;

RECOGNISING that in order to protect wild salmon stocks from adverse impacts that can be caused by aquaculture, introductions and transfers, and transgenics, there is a need to take into account local conditions in determining appropriate management measures;

DESIRING to minimise the possible adverse impacts of aquaculture, introductions and transfers and transgenics on the wild stocks and noting the earlier initiatives taken by the Organization in this respect;

RESOLVE as follows:

ARTICLE 1

Cooperation between the Parties

The Parties shall cooperate in order to minimise adverse effects to the wild salmon stocks from aquaculture, introductions and transfers and transgenics.

ARTICLE 2

Definitions

For the purposes of this Resolution definitions are as given in Annex 1.

ARTICLE 3

Burden of Proof

Each Party, in accordance with the Precautionary Approach, should require the proponent of an activity covered by this Resolution to provide all information necessary to demonstrate that the proposed activity will not have an adverse impact on wild salmon stocks or lead to irreversible change.

ARTICLE 4

Risk Assessment

Risk assessment is integral to the implementation of the Precautionary Approach and serves to promote transparency in the decision-making process. Risk assessment should include identification of options and consideration of mitigation measures. The Parties should develop and apply appropriate risk assessment methodologies in considering the measures to be taken in accordance with this Resolution.

ARTICLE 5

Measures to Minimise Impacts of Aquaculture and Introductions and Transfers

Each Party shall take measures, in accordance with Annexes 2, 3 and 4 to this Resolution, to:

- Minimise escapes of farmed salmon to a level that is a close as practicable to zero through the development and implementation of action plans as envisaged under the Guidelines on Containment of Farm Salmon (CNL(01)53);
- Minimise impacts of ranched salmon by utilizing local stocks and developing and applying appropriate release and harvest strategies;
- Minimise the adverse genetic and other biological interactions from salmon enhancement activities, including introductions and transfers;
- Minimise the risk of transmission to wild salmon stocks of diseases and parasites from all aquaculture activities and from introductions and transfers.

Movements into a Commission area of reproductively viable Atlantic salmon or their gametes that have originated from outside that Commission area should not be permitted.

ARTICLE 6

Non-Indigenous Fish

No non-indigenous fish should be introduced into a river containing Atlantic salmon without a thorough evaluation of the potential adverse impacts on the Atlantic salmon population(s) which indicates that there is no unacceptable risk of adverse ecological interactions.

Introductions into any Commission area of reproductively viable non-indigenous anadromous salmonids or their gametes should not be permitted.

ARTICLE 7

Transgenic Salmonids

The Parties should apply the Guidelines for Action on Transgenic Salmon, CNL(97)48 (Annex 5), to protect against potential impacts from transgenic salmonids on wild salmon stocks. In view of the current lack of scientific knowledge on the impact of transgenic salmonids on wild salmon stocks, the use of transgenic salmonids should be considered a high-risk activity. There should be a strong presumption against any such use.

ARTICLE 8

River Classification and Zoning

For the purposes of developing management measures concerning aquaculture and introductions and transfers, Parties should, as appropriate, develop and apply river classification and zoning systems. Details of such systems should be established in accordance with the guidance in Annex 6.

ARTICLE 9

Mitigation and Corrective Measures

Where adverse impacts on wild salmon stocks are identified, the Parties should initiate corrective measures without delay and these should be designed to achieve their purpose promptly.

Mitigation measures can include activities to safeguard against potential future impacts (e.g. contingency planning, gene banks).

ARTICLE 10

Implementation

In order to have confidence that the wild stocks are protected from irreversible genetic change, from ecological impacts and from impacts of diseases and parasites, full implementation of the measures in this Resolution and its Annexes is essential. Local conditions may warrant consideration of stronger measures.

Where detailed agreements are developed by a regional Commission of NASCO in support of this Resolution, they will be appended. Appendix 1 indicates the current situation within the North American Commission. Any further guidelines to assist in implementing this Resolution will be annexed.

Each Party shall report annually to the Organization on the measures adopted and actions taken under Articles 5, 6, 7 and 9.

ARTICLE 11

Research and Development

Each Party should encourage research and data collection in support of this Resolution (as detailed in Annex 7) and should take steps to improve the effectiveness of the measures contained in this Resolution.

Each Party shall report annually to the Organization on the research and development carried out.

ARTICLE 12

Dissemination of Information

Educational materials should be developed and distributed to increase awareness of the risks that introductions and transfers of aquatic species may pose to wild salmon stocks and the need for the measures that control these activities.

Annex 1 of CNL(03)57

Definitions relating to Salmon Aquaculture, Introductions and Transfers and Transgenics

Term	Definition
Containment	Physical containment: Prevention of escapes of farmed salmon into the freshwater and marine environments. Containment of diseases and parasites: Implementation of measures to prevent the spread of diseases and parasites from aquaculture facilities.
Epidemiological zones	Zones defined by lack or presence of specific pathogens.
Introduction	The intentional or accidental release of a species into an environment outside its native or natural range.
Mitigation stocking	Stocking conducted as a voluntary action or statutory requirement to mitigate lost production due to an activity that cannot be removed.
Non-indigenous	Not originating or occurring naturally in a particular environment; introduced outside its native or natural range.
Population	A group of organisms of a species occupying a specific geographical area.
Rehabilitation	The rebuilding of a diminished population of a finfish species, using a remnant-reproducing nucleus, toward the level that its environment is now capable of supporting.
Restoration	The re-establishment of a finfish species in waters occupied in historical times.
Risk assessment	The process of identifying and describing the risks of activities having an impact on fisheries resources, habitat or aquaculture before such activities take place; the process of identifying a hazard and estimating the risk presented by the hazard, in either qualitative or quantitative terms.
River classification	Designation of a river or watershed according to the degree of human impact.
Salmon aquaculture*	The culture or husbandry of Atlantic salmon and includes salmon farming, salmon ranching and salmon enhancement activities.
Salmon enhancement	The augmentation of wild stocks in individual river systems by the release of Atlantic salmon at different stages in their life-cycles.
Salmon farming	Production system which involves the rearing of Atlantic salmon in captivity for the duration of their life-cycle until harvested.
Salmon ranching*	The release of reared Atlantic salmon smolts with the intention of harvesting all that return.
Salmonid*	All species and hybrids of the family salmonidae.

Stock* (Management unit)	A management unit comprising one or more salmon populations.
Stock (local)	A stock from a river or tributary in close proximity to the river to be stocked. This may refer to rivers with a common bay of entry or closely related catchment areas.
Stocking	The deliberate release of Atlantic salmon into the wild at any stage of their life-cycle for enhancement, mitigation, restoration, rehabilitation or ranching purposes.
Transfer*	The deliberate or accidental transport of Atlantic salmon within their native or natural range.
Transgenic	Containing genes from another species.
Wild salmon	Fish that have spent their entire life-cycle in the wild and originate from parents which were also spawned and continuously lived in the wild.
Zone	Geographic area reflective of the degree of degradation or manipulation of wild Atlantic salmon populations.

* for the purposes of the NAC Protocols, a different definition is used, see NAC(94)14

Annex 2 of CNL(03)57

General Measures To Minimise Impacts

1. Siting and Operation of Aquaculture Activities

1.1 Salmon aquaculture facilities should only be located where hydrographical, epidemiological, biological and ecological standards can be met. Factors which may be taken into consideration include: availability of water supply and receiving waters for discharge; water quality and exchange; water depth; site protection; separation distances between aquaculture facilities; and distance from salmon rivers. Further guidance on containment is provided in Annex 3.

1.2 Consideration should be given to the establishment of "wild salmon protection areas" where salmon aquaculture is restricted or prohibited. Such protection areas may minimise genetic, disease, parasite and environmental impacts.

1.3 The designation of "aquaculture regions", where all the steps in the production process are carried out and which are separated from similar regions by areas without aquaculture, should also be considered. Such regions could provide a framework for management of the aquaculture industry and could assist in controlling the spread of fish diseases and parasites.

1.4 The separation distance between aquaculture facilities at marine sites should be based on a general assessment of local conditions. Wherever possible, different generations of salmon should be reared in separate locations. As local conditions permit, a fallowing regime should be practised as a means of minimising outbreaks of disease and parasites. Aquaculture production should be adapted to the holding capacity of an individual site and should not exceed density levels based on good husbandry practices.

1.5 Dead and dying fish should be removed immediately from aquaculture production facilities and disposed of, along with waste materials, in an approved manner. Procedures should be established to address the effective removal and disposal of infectious material. Contingency plans should be established for the disposal of mortalities from emergency situations.

1.6 Tagging or marking could be used in order to facilitate the identification of farmed salmon in the wild and their separation from wild fish, to determine the source of escapes and to assess the interactions of escaped farmed salmon with the wild stocks.

2. Diseases and Parasites

2.1 All steps in the aquaculture production process from hatchery to processing plant, including transportation of live fish materials, should be conducted in accordance with appropriate fish health protection practices. This includes attention to the application of appropriate husbandry techniques to minimise the risk of disease in the reared stock. These might include vaccination, use of optimal stocking densities, careful handling, frequent inspection of fish, proper diet and feeding regimes, avoidance of unnecessary disturbance of the fish, detailed health inspections, disinfection of transportation equipment and the use of foot baths at production facilities.

Specified diseases and parasites

2.2 Mapping of the presence of serious diseases and parasites should be used to establish epidemiological zones (either with or without specific pathogens). Management measures within these zones should include monitoring to confirm the disease status of a zone and eradication. These zones should be established for at least the following diseases: Viral Haemorrhagic Septicaemia (VHS), Infectious Haematopoietic Necrosis (IHN), Infectious Salmon Anaemia (ISA) and the parasite *Gyrodactylus salaris*.

2.3 Movements of live salmonids and their eggs from a zone where any of the specified diseases is present to a zone free of these diseases should not be permitted. However, movements of salmonid eggs may be permitted where there is minimal risk of transmission of the specified diseases or parasite.

2.4 A list of the prevailing infectious diseases and parasites, and the methods in practice for their control, should be maintained by the appropriate authorities.

Unknown diseases and parasites

2.5 Procedures should be established for the early identification and detection of, and rapid response to, an outbreak of any new disease or parasitic infection likely to affect Atlantic salmon. These procedures should include the establishment of official surveillance services responsible for the monitoring of the health of both wild and farmed fish. The procedures should also demand the rapid introduction of restrictions on the movement of salmonids in the case of an outbreak of a disease or parasitic infection until the status of the disease or parasitic infection is known.

2.6 Even with such procedures, it may not be possible to respond in time to prevent the spread of such a disease or parasitic infection. It is recommended that the Contracting Parties, when establishing or reviewing rules on transfers of fish, consider additional protective measures such as:

- **the establishment of zones:** the intention of such zones, between which the movement of live salmonid fish and their gametes should be restricted and which might be defined using geographical, climatic or biological criteria, is to limit the spread of parasites and diseases to wild stocks;

- **the movement of salmonids:** for disease prevention purposes, the trade in eggs is safer than the trade in live fish. It must, however, be recognised that some serious diseases, such as IPN, BKD and IHN, may be transferred with eggs and ovarian fluid;

- **diseases of wild fish:** there is a need to strengthen and amend disease controls to ensure adequate protection of wild fish.

Health inspections of donor facilities

2.7 Movements of live salmonids and their eggs from hatcheries to areas containing Atlantic salmon stocks, or to facilities where there is a risk of transmission of infection to such areas, should only take place from facilities where regular inspections have not detected significant diseases and parasites.

Use of medicines and disinfectants

2.8 Medicines and disinfectants to control diseases and parasites must be used with care and in accordance with the manufacturer's instructions and any Codes of Practice, and in compliance with regulatory authorities.

3. Gene Banks

3.1 Various activities may result in serious adverse impacts on salmon stocks and strains such that the potential exists that a portion of the salmon genome is lost. In order to protect against this possibility, Parties should consider the establishment of gene banks for stocks that are in danger of extirpation. This could provide a source of genetic material for future restoration programmes.

Annex 3 of CNL(03)57

Guidelines on Containment of Farm Salmon, CNL(01)53

Section 1: Introduction

1.1 The North Atlantic salmon farming industry and the North Atlantic Salmon Conservation Organization (NASCO) have established a Liaison Group. This Liaison Group recognised the importance of conserving and enhancing wild salmon stocks and of supporting a sustainable salmon farming industry and is seeking to establish mutually beneficial working arrangements in order to make recommendations on wild salmon conservation and sustainable farming practices. To this end the Liaison Group has developed guidelines on containment to apply throughout the NASCO Convention area.

1.2 Both Parties recognise that a number of guidelines and measures, outlined below, should apply to all salmon aquaculture activities. The Liaison Group should be updated annually on progress on the development of parallel measures in relation to these activities.

Section 2: Objectives

2.1 these guidelines are intended to result in the prevention of escapes of farmed salmon in the freshwater and marine environments.

Section 3: Site Selection

3.1 sites shall be selected having regard to the capability of the equipment to withstand the weather and other environmental conditions likely to be experienced at that site;

3.2 in the interest of avoiding collision damage, equipment shall comply with the relevant national and international regulations regarding navigation and marking;

3.3 careful consideration shall be given to the siting of land-based facilities, so as to minimise the risk of escapes from these facilities.

Section 4: Equipment and Structures

4.1 nets, cages and moorings systems shall be designed, constructed and deployed to prevent escapes, having proper regard to the prevailing conditions at the site. Moorings systems should have a significant in-built safety margin;

4.2 nets and cages should be marked with an identification number; adequate records of each net and cage in use should be maintained in order to assess its fitness for purpose;

4.3 nets shall be: compatible with the cages with which they will be used; secured to the cage collar so that the collar alone bears the strain; and adequately UV-protected. Net weights shall be installed in such a way as to prevent damage to the nets;

4.4 tank systems shall be designed to contain fish effectively and to minimise the chances of fish escaping. Where the outflow from tanks passes into a settling pond, the outflow from the settling pond should incorporate a screen of suitable size and construction to minimise the chances of fish escaping;

4.5 effective predator deterrence methods shall be implemented as appropriate; these should be up-graded as improved, site-appropriate and cost-effective systems of proven efficacy become available; records of predator attacks that may have caused escapes should be maintained for audit;

4.6 salmon farming systems should be upgraded as improved, site-appropriate and cost-effective systems of proven efficacy become available.

Section 5: Management System Operations

5.1 farm management procedures shall ensure supervision by appropriately trained, qualified or experienced personnel. There is a need for constant vigilance during operations that could result in escapes;

5.2 procedures shall be adopted to ensure that escapes are prevented during movement and handling of stocks (e.g. during stocking, counting, grading, transport, transfers, treatment and harvesting of fish), and during net changes and cleaning;

5.3 regular preventative maintenance, inspection and repair procedures shall be adopted in order to prevent escapes;

5.4 stress testing of all nets in use shall be conducted on a regular basis and testing protocols, minimum breaking strengths and thresholds for net replacement should be specified in action plans. Records of the results of the tests shall be retained throughout the period the net is in use;

5.5 when it is necessary to tow cages, great care shall be taken to avoid damage to the nets;

5.6 storm preparation procedures shall be developed to minimise the risk of damage from storms detailing the actions to be taken to ensure that the site is made ready; after each storm all nets, cages and mooring systems shall be inspected for damage;

5.7 vessels shall be operated so as to minimise the risk of accidental damage to the equipment;

5.8 where practicable, security systems should be installed so as to deter acts of vandalism and malicious damage.

Section 6: Verification

6.1 management systems should include as a minimum all details of introductions, grading, transfers, treatments, handling or any other incident or occurrence that may have led to an escape. These details shall be recorded and retained for audit. Detailed records should allow estimates of escapes to be made. It is recognised that not all discrepancies will be the result of escapes;

6.2 when an event occurs which leads to an escape defined as significant under the action plan, the operator shall advise the appropriate authorities immediately;

6.3 a site-specific contingency plan shall be developed for use when an event occurs which may have led to an escape defined as significant under the action plan. The contingency plan shall include details of the method of recapture to be used and the area and timeframe over which a recapture programme would apply. Efforts shall be made to recapture farmed salmon immediately provided that this is practicable and does not adversely affect wild Atlantic salmon populations;

6.4 action plans should require appropriate authorities to take all reasonable efforts to issue permits for facilitating the contingency plans developed for each farm.

Section 7: Development of Action Plans

7.1 each jurisdiction should draw up a national action plan, or regional plans, at the earliest opportunity, based on these guidelines. The action plan is the process through which internationally agreed guidelines on containment would be implemented at national or regional level through existing or new voluntary codes of practice, regulations, or a combination of both;

7.2 each action plan should:

7.2.1 create a systematic basis for minimising escapes so as to achieve a level of escapes that is as close to zero as is practicable;

7.2.2 include a mechanism for reporting information on the level and causes of escapes;

7.2.3 include a mechanism for reporting and monitoring in order to assess compliance and to verify the plan's efficacy;

7.2.4 identify areas for research and development.

7.3 the action plan should be based on co-operation between industry and the relevant authorities and should include the allocation of responsibilities under the plan(s) and a timetable for implementation.

Section 8: Reporting to the Liaison Group

8.1 each jurisdiction should advise the Liaison Group annually on progress in implementing its action plan(s).

Section 9: Revision

9.1 these guidelines shall be subject to revision, with the agreement of the Liaison Group, to take account of new scientific, technical and other relevant information.

Annex 4 of CNL(03)57

Preliminary Guidelines for Stocking Atlantic Salmon

I. INTRODUCTION

The term stocking is defined as “the deliberate release of Atlantic salmon at any stage of their life-cycle into the wild for enhancement, mitigation, restoration, rehabilitation or ranching purposes,” as defined in Annex I.

Stocking is widely carried out by many government and private entities for the reasons listed above. While these programmes are sometimes successful, and it is now known that stocking can also have negative impacts on wild salmon populations and other species, poor hatchery practices may negatively impact the characteristics of the wild population that we wish to conserve. Other potential consequences include: depression of the survival and abundance of indigenous populations and straying of stocked fish into nearby rivers. There is thus a need to consider fully the risks as well as the benefits arising from stocking.

Codes of Practice for stocking are widely available as are very detailed stocking manuals. These manuals are designed to address issues of local or national relevance.

The present document is designed to provide guidance to Parties on adopting a suitably precautionary approach to carrying out or permitting any stocking of Atlantic salmon into the wild. It is recommended that the guidelines be regularly reviewed and updated as new scientific information becomes available.

II. RATIONALE FOR STOCKING

There are many possible causes for decline of Atlantic salmon populations and stocking may not be an appropriate solution. In addition, stocking is also carried out for ranching purposes.

It is recommended that the NASCO Decision Structure [SCPA(02)16] be utilized to identify problem(s), if any, and as a way to determine if stocking is an appropriate solution.

In accordance with the Precautionary Approach appropriate risk assessment methodology should be developed and applied by the Parties to proposals for stocking. Proponents must also demonstrate that a proposed stocking activity will not have a significant adverse impact on wild salmon populations or have an unacceptable impact on the ecosystem.

III. GUIDELINES FOR CONDUCTING STOCKING

A. <u>Definition of river classes</u>

For the purposes of stocking guidance, the NAC classifies rivers into three types: Class I, Class II and Class III [see Section 2 in NAC94(14) for full definitions].

Rivers are classified as Class I when they are pristine with no significant man-made habitat alterations and neither any history of transfers of fish into the watersheds nor any fish-rearing operations in the watersheds.

Rivers are classified as Class II if one or more of the following conditions occur: the habitat has been altered; non-indigenous wild or hatchery-reared Atlantic salmon populations have been released; or aquaculture has been conducted in marine cage culture within a specified distance of the river. Non-indigenous species may be present in land-based facilities. Introduced species such as rainbow trout would be treated as indigenous if a population has been established for 10 or more years.

Rivers are classified as Class III if habitats have been altered or if fish communities are destabilized or non-indigenous species are present.

B. <u>Guidelines applicable for all rivers</u>

1. Reproductively viable strains of Atlantic salmon of European origin, including Icelandic origin, should not be released in the North American Commission area and reproductively viable strains of Atlantic salmon of North American origin should not be released in the Northeast Atlantic Commission area.

2. Prior to any transfer of eggs, juveniles or broodstock a health inspection of the donor facility will be undertaken during and/or preceding the transfer, and no fish will be transferred from the facility to other facilities or released into waters to which the NASCO Convention applies, if emergency diseases as defined by national, state, or provincial authorities are detected at the donor facility.

3. Fish with restricted diseases, as defined by national, state, or provincial authorities, may be transferred or released into waters to which the NASCO Convention applies, provided that this does not result in changing the disease status of the receiving facility or waters. These transfers must also comply with national, state or provincial regulations.

4. Hatchery rearing programmes to support the introduction, mitigation, restoration, ranching, and enhancement of Atlantic salmon should try to comply with the following measures:

   (a) Use progeny from wild collected broodstock if available or broodstock of appropriate genetic origin;

   (b) Derive broodstock from all phenotype age-groups and the entire run of a donor population;

   (c) Ensure that broodstock removal would not significantly adversely impact on donor population(s);

   (d) In any population re-building programme, careful consideration must be given to the size of the effective breeding population and its management. For establishment and rehabilitation projects, where wild populations may be severely limited (i.e. remnant populations and live gene bank situations) genetic advice should be sought in order to minimise genetic impacts on resultant generations;

(e) Ideally for genetic reasons each male should be mated separately with a female so that the contribution of all males is equal (i.e. do not mix milt of males prior to fertilization, which can promote sperm competition).

5. Stocking and management programmes should take account of the fact that most rivers contain a number of spawning populations.

C. Guidelines applicable to rivers in Class I

1. *General*

(a) No Atlantic salmon reared in a fish culture facility are to be released into a Class I river, another river which has its estuary within an appropriate, specified distance from a Class I river, or a marine site that is within an appropriate, specified distance from a Class I river.

(b) No non-indigenous Atlantic salmon population is to be introduced.

(c) Generally rehabilitation is not necessary in Class I rivers. However, where man-made or natural events impact on a Class I river it may be necessary to reclassify it on an interim basis and carry out physical rehabilitation. Once the population(s) has recovered, the river could again be classified as Class I.

2. *Establishment or re-establishment of Atlantic salmon in a river or part of a watershed where there are no salmon*

Genetic and ecological assessments should be carried out to identify the best option, based on the closest genetic and ecological characteristics of the donor population, for establishment or re-establishment of a population(s).

3. *Ranching*

Atlantic salmon ranching should only take place at release sites located greater than an appropriate, specified distance from the estuary of a Class I river and it is demonstrated that the activity will not significantly affect wild Atlantic salmon populations.

D. Guidelines applicable to rivers in Class II

1. *General*

(a) Reproductively viable Atlantic salmon populations, non-indigenous to their NASCO Commission area, are not to be introduced into watersheds or into the marine environment of Class II rivers.

(b) Restoration and enhancement activities are permitted in the freshwater and marine environments.

2. ***Rehabilitation***

(a) The preferred methods are to improve degraded habitat and to ensure escapement of sufficient spawners through fisheries management.

(b) If further measures are required, residual populations for rehabilitation and enhancement should be used. If the residual populations are too small, proper genetic and ecological assessments should be carried out to identify the best option for re-establishment of populations.

(c) In areas of streams that are devoid of fish, stocking with eggs or fry is recommended, as populations will benefit from natural selection during the juvenile freshwater phase. In some circumstances stocking of pre-spawned adults may also be considered.

3. ***Establishment or re-establishment of Atlantic salmon in a river or part of a watershed where there are no salmon***

(a) To establish an Atlantic salmon population, use a population(s) from a nearby river having similar stream habitat characteristics.

(b) If re-establishing a population, use a population(s) from a nearby river that has similar biological characteristics to the original population.

(c) It is preferable to stock rivers with broodstock or early life-history stages (eggs and fry); this would allow selection and imprinting by juveniles to occur.

4. ***Ranching***

(a) Atlantic salmon ranching should only take place at release sites located greater than an appropriate, specified distance from the estuary of a Class II river and it is demonstrated that the activity will not significantly affect wild Atlantic salmon populations.

E. <u>Guidelines applicable to rivers in Class III</u>

1. ***General***

(a) Indigenous and non-indigenous Atlantic salmon may be considered for introduction or transfer (with the exception noted in item III-B-1 of this Annex), if fish health and genetic protocols are followed and negative impacts on local populations of Atlantic salmon can be shown to be minimal using careful ecological impact evaluation.

2. ***Rehabilitation***

(a) The preferred methods are to improve degraded habitat and to ensure escapement of sufficient spawners through fisheries management.

(b) Rebuilding populations may be achieved by stocking cultured fish.

3. ***Establishment or re-establishment of Atlantic salmon in a river or part of a watershed where there are no salmon***

   (a) To establish an Atlantic salmon population, use a population(s) from a nearby river having similar stream habitat characteristics.

   (b) If re-establishing a population, use a population(s) from a nearby river that has similar biological characteristics to the original population.

   (c) It is preferable to stock rivers with broodstock or early life-history stages (eggs and fry); this would allow selection and imprinting by juveniles to occur.

4. ***Ranching***

   Ranching of Atlantic salmon should only be permitted if it is demonstrated that the activity will not significantly affect Atlantic salmon restoration or enhancement programmes or the development of wild Atlantic salmon populations.

IV. GUIDELINES FOR ADMINISTERING STOCKING

A. Introduction

Both proponents and agencies responsible for managing Atlantic salmon must ensure that the risk of adverse effects on wild Atlantic salmon populations from stocking is minimized.

B. Responsibility of proponent of stocking

1. Proponents must submit an application for stocking of Atlantic salmon to the permit-issuing agency (see Box 1).

2. The application should provide a full justification for stocking such that an evaluation will be possible prior to issuance of a permit. It should also provide sufficient documentary evidence to show that key measures have been considered and that risks of adverse impacts have been minimized.

3. The lead time required for notice and justification of stocking will be determined by the permit-issuing agency.

4. Proponents should be aware of these guidelines established for stocking Atlantic salmon.

5. Proponents must report all stockings that are conducted.

C. Responsibility of those with the authority to issue permits

1. Enact laws to protect wild populations of Atlantic salmon and prevent the release of Atlantic salmon that will significantly affect the productivity of existing wild Atlantic salmon populations.

2. Establish, maintain, and operate a permit system and inventory for all stockings of Atlantic salmon.

3. Enact regulations to control the stocking(s) of Atlantic salmon.

4. Establish a formal scientific evaluation process to review all applications (private and government agencies) for the stocking of Atlantic salmon and recommend conditional acceptance or rejection of the proposed stocking(s) based on the potential impact on the ecosystem.

5. Establish an evaluation process to determine the effectiveness of stocking(s) and their impacts on wild Atlantic salmon populations.

6. Within a class of rivers, each agency may be more restrictive in setting salmon stocking requirements.

7. Annually, submit to NASCO the results of the permit submission/review process, and a list of stockings proposed, approved, and conducted in their jurisdiction and advise of any variance from these guidelines.

Box 1. Guidance for proponents in the preparation of stocking proposals

The following should be the type of information required for the permit-issuing agency, with applications involving stocking of Atlantic salmon, to evaluate the risk of adverse effects on Atlantic salmon populations.

(1) Name the population and/or strain and, where available, its genetic characteristics, and include:

 (a) Time and quantity of stocking;

 (b) List anticipated future stockings;

 (c) List previous stockings.

(2) Area, place, river or hatchery from which the fish will be obtained.

(3) Proposed place of release and any interim rearing sites.

(4) Disease status of donor hatchery, river or other location from which fish are obtained.

(5) Disease status of recipient facility or stream (where available).

(6) Objectives of the stocking and the rationale for not using local population (if such use is not proposed).

(7) Provide the available biological characteristics of donor population. This would include such characteristics as run timing, time of spawning, age-at-maturity, size-at-age, etc. and potential for competition with local populations of Atlantic salmon in the recipient waters or nearby waters.

(8) Information on similar stockings.

(9) Proposed procedure for transportation from donor to recipient site.

(10) List measures to be taken to prevent transmission of disease agents and to reduce the risk of escape of fish.

(11) Species composition at proposed site of introduction and adjacent rivers.

(12) Climatic regime and water chemistry, including pH of waters at the site of proposed introduction and of adjacent rivers.

(13) Potential of stocked fish to disperse to nearby streams.

(14) A bibliography of pertinent literature should be appended to the proposal.

(15) A plan for monitoring, in order to assess how successful stocking has been.

Annex 5 of CNL(03)57

Guidelines for Action on Transgenic Salmon, CNL(97)48

THE PARTIES to NASCO are aware of the development of transgenic salmon (i.e. salmon that contain genes from another organism). While there may be benefits from the introduction of such salmon if, for example, they could not interbreed with wild stocks, the Council recognises that there are also risks which may lead to irreversible genetic changes and ecological interactions.

The Council considers that there is an urgent need to take steps to ensure the protection of the wild stocks and has, therefore, agreed to cooperate to develop means such that transgenic salmon cannot impact upon wild salmon stocks. The following specific steps are agreed.

The Parties will:

a) advise the NASCO Council of any proposal to permit the rearing of transgenic salmonids and provide details of the proposed method of containment and other measures to safeguard the wild stocks;

b) take all possible actions to ensure that the use of transgenic salmon, in any part of the NASCO Convention Area, is confined to secure, self-contained, land-based facilities;

c) take into account the ongoing work by the Parties to the Convention on Biological Diversity to develop a Protocol on Biosafety;

d) inform their salmon producers of the potentially serious risks to wild stocks of this development and consult with the salmon farming industry on this matter through the new Liaison Group established between NASCO and the international salmon farming industry;

e) take steps, as appropriate, to improve knowledge on the potential impacts of transgenic fish on the wild stocks and their habitat;

f) examine the trade implications associated with transgenic salmon in accordance with World Trade Organization Agreements and other instruments of international law.

The Council will:

ask the newly established Working Group on the Precautionary Approach to consider specifically the risks and conservation benefits from transgenic salmon as part of its response on introductions and transfers.

Annex 6 of CNL(03)57

River Classification and Zoning

For the purpose of developing management measures concerning aquaculture, introductions and transfers, Contracting Parties should classify their Atlantic salmon rivers. Where appropriate, consideration should be given to grouping neighbouring or biologically (or otherwise) similar river systems into complementary management zones. River classification and zonation systems are useful to identify specific rivers and/or areas that need special protection. For example, rivers and/or areas that have been subject to significant enhancement efforts may need to be differentiated from rivers and/or areas that have not. This could allow managers to easily identify the rivers and/or areas where future enhancement efforts may or may not be appropriate.

The NAC Protocols and the NASCO Salmon Rivers Database provide examples of river classification systems. Contracting Parties should consider these examples in developing classification systems that are appropriate to their needs. Parties are further encouraged to work co-operatively in developing such systems (e.g. NEAC Parties could develop a classification system that complements the Water Framework Directive).

In conducting a risk assessment for a proposed aquaculture, or introductions and transfers, activity, the classification of the river(s) and/or zone(s) should be taken into account and class/zone-specific factors should be considered. Furthermore, in developing measures appropriate to each class of river or management zone, it is recognised that local conditions are a very significant factor and should also be considered.

Annex 7 of CNL(03)57

Research and Development and Data Collection

Research and data collection should be carried out, as appropriate, in support of this Resolution. Recognising that research requirements are continually developing, a list of current research areas is identified in this Annex. Where appropriate, successful research results should be taken forward to pilot testing

Areas for research and pilot testing include:

Sterile fish

Methodology and techniques for sterilization are now well developed; research should now focus on developing strains of sterile fish which could perform at a level similar to current strains of fish used in farm production. Trials should be encouraged to evaluate the performance of strains of sterile fish under production conditions.

Tagging and marking

Tagging and marking is being used on a small scale in order to facilitate the identification of farmed salmon in the wild and their separation from wild fish, to determine the source of escapes and to assess the interactions of escaped farmed salmon with the wild stocks. Full evaluation of those trials should be conducted in order to assess effectiveness, the feasibility of large-scale marking, and associated costs.

Alternative production methods

There should be an ongoing evaluation of current and new production methods and technology including land-based production facilities, closed or contained floating facilities, water recirculation and other containment technologies to evaluate their potential to reduce the risk of disease and parasite transmission and escapes.

Aquaculture broodstock

Research is recommended on broodstock selection methodology to minimise impacts on wild salmon stocks.

Genetics

Great advances have been made in genetic research in the past decade. These methods should be applied in investigating, in greater detail, interactions between wild salmon and salmon of aquaculture origin, including the extent of hybridization, composition of stocks, and identification of disease strains and appropriate treatment.

Diseases and parasites

The transmission of diseases and parasites from salmon reared in aquaculture to the wild stocks is an area of considerable concern. Research on vectors for transmission, and methods to prevent and control disease and parasite outbreaks in aquaculture, should be encouraged.

Interactions

Information should be collected and analyzed on the extent of intermingling in rivers and at sea between wild salmon and salmon of aquaculture origin.

Risk assessment frameworks

There has been considerable activity in the development of risk assessment frameworks. There remains a need to identify the appropriate factors to be included in a risk assessment in order to evaluate the potential impacts of aquaculture, introductions and transfers, and transgenics on wild salmon stocks.

Biological impacts

Further work is recommended on biological interactions between wild salmon and salmon of aquaculture origin including competition and behavioural interactions that may affect the viability and success of the wild populations.

Appendix 1 of CNL(03)57

North American Commission Protocols for the Introduction and Transfer of Salmonids
Summary of Protocols by Zone, NAC(94)14

Note:

This document contains only summary Protocols and should be read in conjunction with document NAC(92)24.

1 ZONING OF RIVER SYSTEMS

The NAC has adopted the concept of Zoning for application of these protocols to the NAC Area. Three zones have been designated based on the degree of degradation or manipulation of the wild Atlantic salmon populations (Figure 1). The NAC recognizes that Atlantic salmon populations have been variously affected by human activities. These activities include over-harvesting, selective fishing, habitat degradation, mixing of stocks, introduction of non-indigenous fish species, and spreading fish diseases. Atlantic salmon stocks in northern areas (Zone I) have generally been least affected, and those stocks in the southern area (Zone III) have been most affected, by humans.

In order to allow operational flexibility within a Zone, river systems have been classified as Class I, II, or III rivers. Generally, rivers will have the same classification as the Zone in which they occur. For example, in Zone II, river systems will be mainly categorized as Class II. However, a river system may be assigned a higher classification than the Zone in which it is located (e.g. Class I river in Zone II) to allow additional protection for valuable Atlantic salmon stocks. In extenuating circumstances and if a river is sufficiently isolated from other rivers, it is acceptable to have a river with a lower classification than the Zone in which it is located (e.g. Class III rivers within Zone II or Class II rivers in Zone I).

All rivers are generally classified at the same level as the Zone designation. Member countries wishing to change the location of Zone boundaries or to have rivers of a lower classification within a Zone should submit their recommendations, with scientific justifications, to NAC.

2 DESCRIPTION OF ZONES

Zone I: Geographic Area: Northern Quebec, Labrador, Anticosti Island and the major salmon-producing rivers in Newfoundland north of Cape Ray and west of Cape Saint John; namely: all rivers from Cape Ray to Cape Anguille and in Bay of Islands, Lomond River, Portland Creek, River of Ponds, Torrent River, Castors River, St. Genevieve River, Western Arm Brook, Salmon River (Hare Bay), Northeast River (Canada Bay), and Main River (Sop’s Arm).

Rivers are classified primarily as Class I. They are pristine rivers with no significant man-made habitat alterations, no history of transfers of fish into the watersheds, and no fish-rearing operations in the watersheds.

Zone II: Geographic Area: Quebec rivers flowing into Gulf of St. Lawrence south of Pte. des Monts, Gaspé region of Quebec, Magdalen Islands, Prince Edward Island, New Brunswick, Nova Scotia, Newfoundland (except rivers designated as Class I rivers, referenced above in description of Zone I) and State of Maine east of Rockland.

Rivers are classified primarily as Class II watersheds in which one or more of the following conditions occur: the habitat has been altered; non-indigenous wild or hatchery-reared Atlantic salmon stocks have been released; or aquaculture has been conducted in marine cage culture. Non-indigenous species may be present in land-based facilities. Introduced species such as rainbow trout would be treated as indigenous if a population has been established for ten or more years.

Zone III: Geographic Area: Lake Ontario, southern Quebec draining to St. Lawrence River, State of Maine west of Rockland, New Hampshire, New York, Connecticut, Massachusetts, New Jersey, Rhode Island, and Vermont.

Rivers are classified primarily as Class III watersheds in which habitats have been altered, or where fish communities are destabilized, or exotic species are present.

3 PROTOCOLS

3.1 Protocols applicable to all three Zones

(1) Reproductively viable strains of Atlantic salmon of European origin, including Icelandic origin, are not to be released or used in Aquaculture in the North American Commission Area. This ban on importation or use of European-origin Atlantic salmon will remain in place until scientific information confirms that the risk of adverse genetic effects on wild Atlantic salmon stocks is minimal.

(2) No live salmonid fishes, fertilized eggs, gametes, or fish products are to be imported from IHN enzootic areas, unless sources have an acceptable history of disease testing demonstrating the absence of IHN (e.g. Great Lakes Fish Health Disease Committee protocol requirements). IHN infected areas currently include State of Washington, Oregon, Idaho, California, Alaska, British Columbia, Japan, and parts of Taiwan and France.

(3) Prior to any transfer of eggs, juveniles or brood stock a minimum of three health inspections of the donor facility will be undertaken during the two-year period immediately preceding the transfer; and

- No fish will be transferred from the facility to other facilities or released in waters within the NAC Area if emergency diseases are detected at a rearing facility (see Annex III, Part II of NAC(92)24);

- Fish with restricted diseases may be transferred or released in the NAC Area provided that this does not result in changing the disease status of the receiving facility or waters. These transfers must also comply with national, state or provincial regulations (see Annex III, Part II of NAC(92)24).

(4) Prior to any movement of non-native fishes into a river system or rearing site inhabited by Atlantic salmon the agency with jurisdiction shall review and evaluate fully the potential for interspecific competition which would adversely impact on the productivity of wild Atlantic salmon populations. Such evaluations should be undertaken, to the extent possible, with information on the river in which the introduction is to occur and from similar situations.

(5) Hatchery rearing programmes to support the introduction, re-establishment, rehabilitation and enhancement of Atlantic salmon should try to comply with the following measures:

(a) Use only F1 progeny from wild stocks;

(b) Derive broodstock from all phenotype age-groups and the entire run of a donor population;

(c) Avoid selection of the “best” fish during the hatchery rearing period; and

(d) During spawning, make only single paired matings from a broodstock population of no less than 100 parents. Should the number of one sex be fewer than 50, the number of spawners of the other sex should be increased to achieve a minimum effective population size (N_e) of 100.

$$N_e = \frac{4N♂N♀}{N♂+N♀}$$

3.2 Protocols applicable to Zone I

Zone I consists of Class I watersheds where every effort must be made to maintain the existing genetic integrity of Atlantic salmon stocks. The following summary protocols apply.

3.2.1 General within Zone I

- No Atlantic salmon reared in a fish culture facility are to be released into a Class I river, another river which has its estuary less than 30 km from a Class I river, or a marine site less than 30 km from a Class I river (distances would be measured in a straight line(s) headland to headland).

- No non-indigenous fish species, other than Arctic charr and brook trout, or non-indigenous Atlantic salmon stock is to be introduced into a Class I watershed.

3.2.2 Rehabilitation

- Fisheries management techniques will be used to ensure sufficient spawners such that spawning escapement exceeds a minimum target level to maintain an effective breeding population.

- Habitat that becomes degraded will be restored to the greatest extent possible.

3.2.3 Establishment or re-establishment of Atlantic salmon in a river or part of a watershed where there are no salmon

- Use transfers of adults or juvenile salmon from the residual population in other parts of the watershed.

- A nearby salmon stock which has similar phenotypic characteristics to the lost stock could be transferred if there is no residual stock in the recipient watershed and provided an effective breeding population is maintained in the donor watershed (See Section 3.1 (5)).

- If the biological characteristics of the original stock are not known or there was no previous stock in the recipient watershed, then transfer broodstock or early life stages from a nearby river having similar habitat characteristics.

3.2.4 Aquaculture

(i) Rearing in marine or freshwater cages, or land-based facilities:

  - Reproductively viable Arctic charr and brook trout may be reared in marine and freshwater cages and in land-based facilities;

  - Rearing of other salmonids or non-indigenous fishes is not permitted in the marine environment within 30 km of a Class I river, in a Class I river, or in a watershed with its estuary less than 30 km from the estuary of a Class I river. (30 km is measured in a straight line(s) headland to headland);

  - Rearing of reproductively viable indigenous species and reproductively sterile non-indigenous species is permitted in land-based facilities;

  - Reproductively sterile salmonids may be reared in the marine environment, and/or in a watershed with its estuary greater than 30 km from a Class I river, provided that the risk of adverse effects on wild salmon stocks is minimal;

  - Natural or man-made ponds which have adequate screening of the outlet and inlet streams, such that the risk of fish escaping is low, can also be treated as land-based facilities.

(ii) Commercial ranching:

- No commercial ranching of salmonids is permitted within 30 km of the estuary of a Class I river (measured in a straight line(s) headland to headland);

- At locations greater than 30 km from the estuary of a Class I river, reproductively sterile Atlantic salmon, reproductively viable brook trout or Arctic charr, and reproductively sterile non-indigenous species may be ranched provided that the risk of adverse effects on wild Atlantic salmon stocks are minimal.

3.3 Protocols applicable to Zone II

3.3.1 General within Zone II

- Reproductively viable non-indigenous species, other than Arctic charr and brook trout, and reproductively viable Atlantic salmon stocks, non-indigenous to the NAC area, are not to be introduced into watersheds or into the marine environment of Zone II.

- Restoration, enhancement and aquaculture activities are permitted in the freshwater and marine environments.

3.3.2 Rehabilitation

- The preferred methods are to improve degraded habitat and ensure escapement of sufficient spawners through fisheries management.

- If further measures are required, use residual stocks for rehabilitation and enhancement. If the residual stock is too small, select a donor stock having similar life-history and biochemical characteristics from a tributary or nearby river.

- Stocking of hatchery-reared smolts is preferred, to reduce competition with juveniles of the natural stocks.

3.3.3 Establishment or re-establishment of Atlantic salmon in a river or part of a watershed where there are no salmon

- To establish an Atlantic salmon stock, use a stock from a nearby river having similar stream habitat characteristics.

- If re-establishing a stock, use a stock from a nearby river which has similar biological characteristics to the original stock.

- It is preferable to stock rivers with broodstock or early life-history stages (eggs and fry); this would allow selection and imprinting by juveniles to occur.

- If eggs are spawned artificially, use single pair matings and optimize the effective number of parents (See Section 3.1(5)).

3.3.4 Aquaculture

(i) Rearing in marine or freshwater cages, and land-based facilities:

- It is important to apply methods which minimize escapes;

- Reproductively viable Arctic charr and brook trout may be reared in marine and freshwater cages and in land-based facilities;

- Develop domesticated salmon broodstock using local stocks; or, if local stocks are limited, use nearby stocks;

- Reproductively viable non-indigenous species may only be introduced into land-based facilities where risk of escapement is minimal;

- Non-indigenous salmonid stocks may be introduced into the wild or used in cage rearing operations if the fish are reproductively sterile and the risk of adverse ecological interactions is minimal.

(ii) Commercial ranching:

- Commercial Atlantic salmon ranching will only be permitted at release sites located greater than 20 km from the estuary of a Class II river (measured in a straight line(s) headland to headland) and it is demonstrated that the activity will not negatively affect wild Atlantic salmon stocks;

- Non-indigenous species or distant national Atlantic salmon stocks may be used if the fish are reproductively sterile and the risk of adverse ecological interactions is minimal.

3.4 Protocols applicable to Zone III

3.4.1 General within Zone III

- Indigenous and non-indigenous salmonid and non-salmonid [except reproductively viable Atlantic salmon stocks non-indigenous to the NAC Area] fishes may be considered for introduction or transfer if fish health and genetic protocols are followed and negative impacts on Atlantic salmon can be shown to be minimal using careful ecological impact evaluation.

3.4.2 Rehabilitation

- Habitat quality should be upgraded wherever possible.

- Rebuilding stocks can be achieved by controlling exploitation and by stocking cultured fish.

3.4.3 Establishment or re-establishment of Atlantic salmon in a river or part of a watershed where there are no salmon

- Transfer source stocks from nearest rivers having similar habitat characteristics.

- Stock with juvenile stages (eggs, fry and/or parr). If eggs are spawned artificially, use single pair matings and optimize the effective number of parents (Section 3.1(5)).

3.4.4 Aquaculture

(i) Rearing in marine or freshwater cages, or land-based facilities:

  - Use of local stocks is preferred but non-indigenous stocks may be cultured;

  - Marine cage culture can be widely practised; but preferred locations are at least 20 km from watersheds managed for salmon production (measurements are by straight lines from headland to headland);

  - Culture of non-indigenous species in land-based facilities on Class III watersheds is permitted in adequately controlled facilities where risk of escapement is minimal.

(ii) Commercial ranching:

  - Commercial ranching of salmonids is permitted if it is demonstrated that the activity will not negatively affect Atlantic salmon rehabilitation or enhancement programmes or the development of wild Atlantic salmon stocks.

4 GUIDELINES FOR APPROVAL OF INTRODUCTIONS AND TRANSFERS

Both proponents and agencies responsible for managing salmonids have a responsibility for ensuring that risk of adverse effects on Atlantic salmon stocks from introductions and transfers of salmonids and other fishes is low. Reasonable laws to protect wild stocks should be enacted by each agency, as necessary. Resource management agencies will determine protection for habitats with Atlantic salmon potential.

4.1 Responsibility of proponent

The proponent must submit an application for introduction or transfer of fishes to the permit-issuing agency. This request must provide a full justification for the introduction or transfer such that a complete evaluation will be possible prior to issuance of a permit. The list of information to be included in the justification for introductions and transfers is in Section 4.4 below. The lead time required for notice and justification of introductions and transfers will be determined by the permit-issuing agency. Proponents should be aware of the protocols established for introductions and transfers.

4.2 Responsibility of government agencies having the authority to issue permits

These agencies shall be those entities having the responsibility for fishery management within the receiving area. The responsibilities of the agencies shall include:

(1) Establish, maintain, and operate a permit system and inventory for all introductions and transfers of fishes;

(2) Enact regulations required to control the introductions and transfers of fishes as per established protocols;

(3) Establish a formal scientific evaluation process to review all applications (private and government agencies) for the introduction and transfer of all species and recommend conditional acceptance or rejection of the proposed introductions and transfers based on the potential impact on the productivity of Atlantic salmon;

(4) Within the Zones each agency may be more restrictive in classifying individual watersheds. Rarely, a less restrictive classification may be applied to an individual watershed if its estuary is at least 30 km in Zone I, or 20 km in Zone II (measured in straight lines headland to headland) from a watershed with a higher classification;

(5) Annually, submit to the NAC Scientific Working Group the results of the permit submission/review process, and a list of introductions and/or international transfers proposed for their jurisdiction;

(6) Prevent the release of fishes which will adversely affect the productivity of wild Atlantic salmon stocks.

4.3 Responsibilities of the NAC Scientific Working Group on Salmonid Introductions and Transfers

(1) Maintain an inventory of all introductions of salmonids, transfers of salmonids from IHN-infected areas, and importation of salmonids across national boundaries into the Commission Area.

(2) Review and evaluate all introductions and transfers referenced in Section 4.3(1) above in relation to the NAC protocols and report the results to the North American Commission.

4.4 Preparation of proposals

The following information is required, by the permit-issuing agency, with applications involving introductions and transfers of salmonids, except for restocking into source river. This information will be used to evaluate the risk of adverse effects on Atlantic salmon stocks.

(1) Name the species, strain and quantity to be introduced or transferred, and include:

  (a) Time of introduction or transfer;

  (b) List anticipated future introductions or transfers;

  (c) List previous introductions and/or transfers.

(2) Area, place, river or hatchery from which the fish will be obtained.

(3) Proposed place of release and any interim rearing sites.

(4) Disease status of donor hatchery, river or other location from which fish are obtained.

(5) Disease status of recipient facility or stream (where available).

(6) Objectives of the introduction or transfer and the rationale for not using local stock or species.

(7) For non-indigenous species, provide the available information on the proposed species' life-history, preferred habitat, potential parasites and disease agents, and potential for competition with Atlantic salmon in the recipient waters or nearby waters.

(8) Information on similar transfers or introductions.

(9) Proposed procedure for transportation from donor to recipient site.

(10) List measures to be taken to prevent transmission of disease agents and to reduce the risk of escape of fish.

(11) Species composition at proposed site of introduction and adjacent rivers.

(12) Climatic regime and water chemistry, including pH of waters at the site of proposed introduction and of adjacent rivers.

(13) For indigenous species determine the life-history and biological characteristics of donor stock. This would include such characteristics as run timing, time of spawning, age-at-maturity, size-at-age etc.

(14) Potential of introduced or transferred fish to disperse to nearby streams.

(15) A bibliography of pertinent literature should be appended to the proposal.

4.5 Evaluation of proposals

The evaluation of proposals will be the responsibility of the permitting agency and will focus on the risk to Atlantic salmon production and potential production associated with the proposed introductions and/or transfers. The evaluation will be based on the classification of the recipient watershed. All requests for introductions or transfers must provide sufficient detail (Section 4.4 above) such that the potential risk of adverse effects to Atlantic salmon stocks can be evaluated.

The evaluation of potential adverse effects on fish health will consider the disease history of the donor and recipient facility and/or watershed with specific reference to the potential for transferring emergency diseases. The risk of detrimental genetic effects of introducing a non-indigenous stock into a river will be evaluated taking into consideration the phenotypic and life-history characteristics of the donor stock, the biochemical information (mitochondrial/nuclear DNA and enzyme frequencies, if available), and geographic distance between donor and recipient locations. The evaluation of the risk of ecological effects on Atlantic salmon populations is more involved. Introduction of non-indigenous Atlantic salmon stocks and/or non-indigenous species will be evaluated by considering the life-history and habitat requirements of the transferred fish.

The introduction of non-indigenous species poses a significant risk to the productivity of the Atlantic salmon stocks. Evaluation will be by comparison of the habitat requirement and behaviour of both the proposed introduced species and the indigenous Atlantic salmon stock at all life stages. The habitat requirements and areas of possible interactions with Atlantic salmon have been described for 13 fish species (see Part IV, Ecological Subgroup report). These can be used to provide a cursory evaluation of the life-history stage at which interactions would occur. However, more detailed information on stocks and habitats in both donor and recipient locations would be required in the form of an envirogram (example is provided in Part IV). Where insufficient data are available, research will be required prior to permitting the introduction or transfer.

An outline example of the type of information which is available in the species summaries (Part IV) is presented below for rainbow trout:

(1) Conditions under which interactions may occur:

- spawning rainbow trout may overcut Atlantic salmon redds and displace developing eggs;

- competitive interaction of juveniles: (i) exploitative competition for food; and (ii) interference competition;

- rainbow trout juveniles are more aggressive than juvenile Atlantic salmon, and may displace salmon from pools; and

- large rainbow trout are piscivorous and could prey on all stages of young salmon including emigrating smolts.

(2) Low interaction:

- in streams which Atlantic salmon do not utilize;

- in streams in which salmon are well established; and

- aquaculture using sterile fish or land-based facility.

(3) Conditions under which no interaction would occur. It would be permissible to use reproductively viable rainbow trout:

- in habitats with pH less than 5.5;

- if rainbow trout are already present in recipient stream; and

- in disturbed ecosystems where Atlantic salmon are absent and sport fishing would be improved.

5 GLOSSARY

Applicant: See proponent.

Aquaculture: The culture or husbandry of aquatic fauna other than in research, in hobby aquaria, or in governmental enhancement activities.

Commercial ranching: The release of a fish species from a culture facility to range freely in the ocean for harvest and for profit.

Competition: Demand by two or more organisms or kinds of organism at the same time for some environmental resource in excess of the available supply.

Containment: Characteristic of a facility which has an approved design which minimizes operator error to cause escape of fish, or unauthorized persons to release contained fish.

Diversity: All of the variations in an individual population or species.

Enhancement: The enlargement or increase in number of individuals in a population by providing access to more or improved habitats or by using fish culture facility production capability.

Exotic: See introduced species.

Fish: A live finfish.

Fish culture facility: Any fish culture station, hatchery, rearing pond, net pen, or container holding, rearing, or releasing salmonids.

Gamete: Mature germ cell (sperm or egg) possessing a haploid chromosome set and capable of formation of a new individual by fusion with another gamete.

Genetics: A branch of biology that deals with the heredity and variation of organisms and with the mechanisms by which these are effected.

Indigenous: Existing and having originated naturally in a particular region or environment.

Introduced species: Any finfish species intentionally or accidentally transported or released by Man into an environment outside its native or natural range.

Introduction: The intentional or accidental release of a species into an environment outside its native or natural range.

Isolation: Means restricted movement of fish and fish pathogens within a facility by means of physical barriers, on-site sanitary procedures and separate water supply and drain systems and cultural equipment.

Mariculture: Aquaculture in sea water.

Native: See indigenous.

N_e: Effective population size $= \dfrac{4N_{\male}N_{\female}}{N_{\male}+N_{\female}}$

Niche: A site or habitat supplying the sum of the physical and biotic life-controlling factors necessary for the successful existence of a finfish in a given habitat.

Non-indigenous: Not originating or occurring naturally in a particular environment; introduced outside its native or natural range.

Population: A group of organisms of a species occupying a specific geographic area.

Predator: An individual that preys upon and eats live fish, usually of another species.

Proponent: A private or public group which requests permission to introduce or transfer any finfish within or between countries and lobbies for the proposal.

Quarantine: The holding or rearing of fish under conditions which prevent the escape or movement of fish and fish disease agents. (For a detailed description of a quarantine facility see Annex IX of Part II).

Rehabilitation: The rebuilding of a diminished population of a finfish species, using a remnant reproducing nucleus, toward the level that its environment is now capable of supporting.

Restoration: The re-establishment of a finfish species in waters occupied in historical times.

Salmonid: All species and hybrids of the Family Salmonidae covered by the AFS checklist special publication No. 12, "A list of Common and Scientific Names of Fishes from the United States and Canada (1980)".

Species: A group of interbreeding natural populations that are reproductively isolated from other groups.

Stock: Population of organisms sharing a common gene pool which is sufficiently discrete to warrant consideration as a self-perpetuating system which can be managed.

Strain: A group of individuals with a common ancestry that exhibits genetic, physiological, or morphological differences from other groups as a result of husbandry practices.

Transfer: The deliberate or accidental movement of a species between waters within its native or natural geographic range, usually with the result that a viable population results in the new locations.

Transferred species: Any finfish intentionally or accidentally transported and released within its native or natural geographic range.

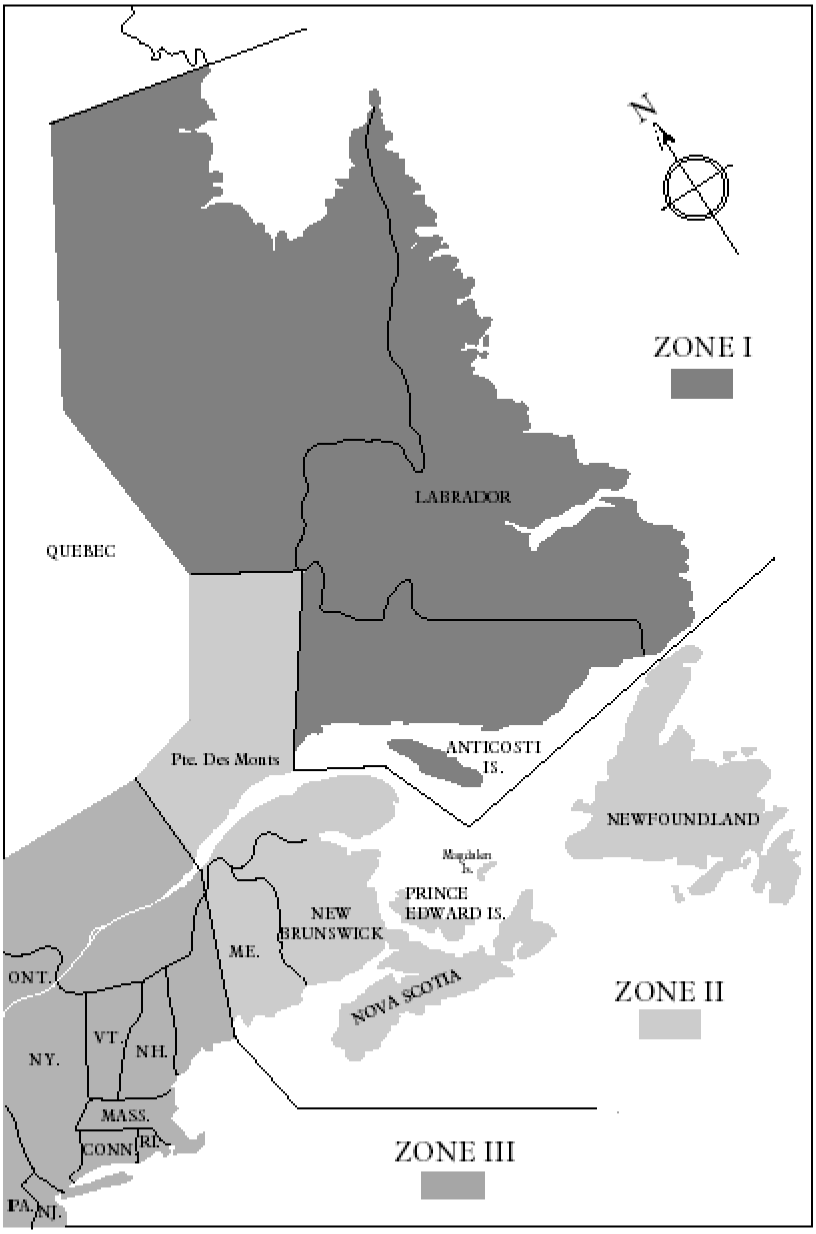


Figure 1.

Map of eastern Canada and northeastern USA showing the three zones designated for implementation of the Protocols. Certain rivers on the west coast of Newfoundland are designated as Zone I, even though Newfoundland is shown as being in Zone II.

ANNEX 21

Council

CNL(03)18

Report of the Technical Workshop on Development of a Framework for Assessing Social and Economic Values Related to Wild Atlantic Salmon

CNL(03)18

Report of the Technical Workshop on Development of a Framework for Assessing Social and Economic Values Related to Wild Atlantic Salmon

1. The wild Atlantic salmon has many aspects to its value. There are, of course, the values of the recreational and commercial fisheries to fishermen, owners, and fishery-related businesses. The economic impact of these fisheries on local and national economies may be very significant. There is also the value of subsistence fisheries to the fishermen and local communities. In addition, however, there are other values associated with the salmon itself, a highly prized species and an indicator of environmental quality. The salmon is valued by society in general, not just fishermen. It may be unique among fishes in the wide range of values it generates. It has, perhaps like tigers and leopards, an "existence value" and other values. These values are infrequently assessed, but may greatly exceed the values associated with the salmon fisheries. For example, it has been estimated that Londoners are willing to pay £12 million per year to re-establish a breeding population of salmon in the River Thames. A similar evaluation for the River Wye indicated a value of £43 million per year. In addition, there are other social, cultural and spiritual and psychological values that may not be fully expressed in monetary terms.

2. Some aspects of value are obviously more difficult to measure than others but the Workshop sought to explore all of these values and to give some guidance on how they might each be estimated. A framework or template was developed which could be used to assess the economic and social values of the wild stocks. This gives guidance on all the sources of value and on assessment methodologies to ensure comparability of studies conducted in different countries or regions.

3. The Workshop suggests that the SCPA should, even now, urge administrators and others concerned with decision-making in each country on, for example, habitat, hydroelectric development, road building and aquaculture, to ensure that the difficult-to-measure but long-lasting and widespread values associated with the Atlantic salmon, e.g. "existence value", are fully incorporated and given due weight in decisions that affect its conservation.

4. The main recommendation of the Workshop is that, as a first step, there should be efforts to significantly improve our knowledge base on all of the social and economic values of wild salmon stocks so as to better inform decision-making. This would mean the Parties using the agreed template to collate comprehensive information on these values and, as resources permit, to fill gaps in knowledge. This should give the Council a much improved picture of the true extent of the value of wild salmon in the North Atlantic. There might need to be a pilot desk study to review available information so as to build this more comprehensive database of the values of the Atlantic salmon. The information obtained should then assist the SCPA in the next step of considering how to incorporate these social and economic values into the Precautionary Approach.

Secretary
Edinburgh
7 April, 2003

WSEV(03)12

Report of the Technical Workshop to Develop a Framework for Assessing the Social and Economic Values Related to Wild Salmon

Roxburghe Hotel, Edinburgh
21-24 January 2003

1. Introduction

1.1 The Chairman, Dr Malcolm Windsor (Secretary of NASCO), opened the meeting and welcomed participants to Edinburgh. He noted that the two main tasks for the Workshop were to develop a listing of all the social and economic values of Atlantic salmon, including definitions and examples, and an internationally agreed framework/template for assessing these values. He indicated that this would be a challenging task since there are many facets to the salmon's value, probably more so than for most other species of fish, and some of these may not be easy to assess in monetary terms. Better quantification of these values is likely to assist with rational management of the resource. For example, all around the North Atlantic, salmon fisheries generate economic benefits, often to remote rural communities. But this is only one part of the salmon's value, since the salmon serves as an indicator of a healthy environment. Society benefits in many ways from having salmon in rivers and going about their migrations. Such benefits are real and significant even if they are hard to quantify in monetary terms. The Chairman indicated that, so far as he was aware, NASCO was the first international fisheries Commission to consider social and economic aspects in any detail so there is no precedent to guide the Workshop. He stressed the need for the Workshop's recommendations to be clearly formulated and comprehensible not just to economists but also to the managers in NASCO and to interested parties around the Atlantic.

1.2 A list of participants is contained in Annex 1.

2. Nomination of a rapporteur

2.1 Dr Peter Hutchinson (Assistant Secretary of NASCO) was appointed as rapporteur for the meeting.

3. Adoption of the Agenda

3.1 The Workshop adopted an agenda for the meeting, WSEV(03)13 (Annex 2).

4. Consideration of the Project Proposal (Terms of Reference)

4.1 The Workshop reviewed its Terms of Reference, WSEV(03)2, which had been agreed by the Council of NASCO at its Nineteenth Annual Meeting. The Council of NASCO wished to stimulate discussions between social and economic scientists and managers with a view to identifying the various social and economic aspects of the resource and approaches to their assessment. Different views were expressed on the ability of the Workshop to critically evaluate the methods used to assess the value of Atlantic salmon and on whether there might be a need for a follow-up meeting and use of external expertise. The view was expressed that it would assist the Standing Committee on the Precautionary Approach (SCPA) if the Workshop could integrate biological, social and economic aspects into a framework, which could be used to evaluate management options. However, others felt that though this might well be a desirable longer-term aim it was a large enough task at this Workshop to address items 1 and 2 of the SCPA's Terms of Reference (SCPA(02)17) as described in WSEV(03)2.

5. Development of an inventory of available information on social and economic values related to wild Atlantic salmon

Introduction

5.1 Information which had been compiled and summarised by the Contracting Parties was presented in documents WSEV(03)3, WSEV(03)5, WSEV(03)6, WSEV(03)7, WSEV(03)9 and WSEV(03)10. Using this information as a starting point, the Workshop developed a listing of social and economic values related to Atlantic salmon with definitions, explanations of the values and examples from around the North Atlantic (Table 1). This listing provides information on the values associated with the Atlantic salmon. It does not include values associated with its habitat or other human activities that may have an impact on salmon and their habitat, e.g. aquaculture, hydro-electric development. The Workshop recognized that in considering the value of Atlantic salmon it is important for managers to be aware of the following:

- to whom the value accrues: the listing identifies these groups of people;
- that it is not appropriate to add all of the values together, but it may be possible to add or compare some of the values, depending on the extent of the analysis undertaken (see 5.3 and 5.42);
- that a dollar has different values to individuals of different financial status;
- that the values may change over time in response to changes in stock abundance and other factors.

Definitions and measures of economic value

5.2 A range of economic measures associated with the wild Atlantic salmon and its fisheries are listed in Table 1. Economic terminology has been avoided where possible for simplicity. Paragraphs 5.6 to 5.30 provide brief definitions of these measures (with illustrative examples in boxes). Where the reference is given as a paper number it refers to a paper submitted to the Workshop. The order follows the listing in Table 1. Each section identifies the source of value; to whom it is valuable; and the measures that apply to each of these groups. These measures are of two types, as indicated in Table 1:

(i) **Economic values**: which indicate the various aspects of value of salmon to different groups of people, arising in a variety of different ways; and

Table 1: Summary of economic measures associated with the wild Atlantic salmon and its fisheries

Source of value	To whom	Measure of (i) economic value or (ii) economic impact (shaded in grey)
Recreational fishery	Fishermen	Fishermen's consumers' surplus
	Fishery owners	Market value of fishing rights
	Fishery-related businesses	Producers' surplus (sales minus production costs)
	Economy (Local/Regional/National)	From fishermen's expenditure: net output; impact on GDP
	Economy (Local/Regional/National)	Export earnings (from visiting fishermen)
Commercial fishery	Fishermen	Net yield (sales minus costs)
	Fishermen	Willingness-to-sell the right to fish (includes 'net yield')
	Fishery owners	Market value of fishing rights
	Fishery-related businesses	Producers' surplus (sales minus production costs)
	Economy (Local/Regional/National)	Net output or value added (from all sales after processing)
	Economy (Local/Regional/National)	Export earnings from external sales
Subsistence fishery	Fishermen	Cost of alternative food/goods
	Fishermen/Local community	Willingness-to-sell (the right to fish)
Eco-tourism	Tourists	Tourists' willingness-to-pay (net of expenditure)
	Tourism related businesses	Tourists' expenditure (net of production costs)
	Economy (Local/Regional/National)	From tourists' expenditure: net output; impact on GDP
	Economy (Local/Regional/National)	Export earnings from visiting tourists
All fisheries	General public	Option value
	General public	Existence value
	General public	Bequest value
	General public	Externalities
The salmon itself	General public	Existence value
	General public	Bequest value
Genetic diversity	Aquaculture businesses	Option value

(ii) **Economic impacts** (highlighted in grey): which indicate the impact of salmon on the economy of a specified locality, region or nation.

5.3 In general, economic values (which are all net of costs) may be added together to provide a single 'net economic value' for wild salmon, insofar as that may be helpful. (Note - in Table 1, some of the measures are different ways of measuring the same value). However, these 'economic values' cannot be added to the second category of measures indicating 'economic impact'.

5.4 For the purposes of decision-making it is important to identify who the beneficiaries are for each source of value. Information should, therefore, be collected on a range of characteristics including, for example, the number of people employed or participating in a fishery or fishery-related business; their age, area of residence, social class, availability of alternative activities, and for fishermen, frequency and history of participation.

5.5 It is important to recognise the difference between the economic values expressed as annual figures and those, such as willingness-to-sell fishing rights, which often cover a longer period and may be in perpetuity. The two may be made comparable by adjusting streams of annual values using the process of **discounting**. This recognises that a benefit received in a year's time is less valuable (by a fixed proportion – the discount rate) than one received now. Discount rates are generally between 5 and 10 per cent per year.

In Norway, the total present economic value of salmon was estimated for the 50 most important rivers, incorporating both fishery-related and other economic values. The annual economic value was estimated as NOK 1 billion; the best estimate of the total present economic value of salmon (a summation of the future stream of value including the current value) in these rivers was NOK 20 billion.

Recreational fishery

5.6 **Fishermen – consumers' surplus:** The value fishermen place on their recreation is indicated by their willingness-to-pay for it; they are faced with a range of costs including those for licences, travel, accommodation, tackle and their time. Their willingness-to-pay generally exceeds these costs, though in some cases costs and willingness-to-pay may be equal. **Consumers' surplus** is the difference between fishermen's willingness-to-pay for salmon fishing and their actual expenditure.

In Scandinavia, fishermen's willingness-to-pay for all types of recreational fishing (not just salmon) was estimated as a proportion of their actual expenditures: 148% in Denmark, 141% in Finland, 130% in Iceland, 155% in Norway and 138% in Sweden, WSEV(03)3.

In England and Wales, salmon anglers' net willingness-to-pay is estimated, somewhat crudely, as being similar in magnitude to the market value of salmon fishing rights, £128 million, WSEV(03)7.

5.7 **Fishery owners – market value of fishing rights:** In countries where the right to fish is privately owned, the owners benefit from the income they can obtain from anglers who pay them for access. The fishery owners can, therefore, extract some of the anglers' net willingness-to-pay for their fishing. Assuming that the fees received exceed any costs incurred by the owners, they derive a net benefit from their fisheries.

In Iceland, in 2001, annual income from anglers to the river associations (which own the fishing rights) averages between US$200 and US$300 per salmon caught, WSEV(03)5.

5.8 While this may be estimated on an annual basis as in Iceland, the **market value of fishing rights,** a capitalised value, represents the future potential stream of benefits, net of costs, to the fishery owners.

In Scotland (UK), the market value of salmon fishing rights in 1988 was estimated to be between £200 and £300 million, with a best estimate of £255 million, WSEV(03)3. Each salmon in the rod catch was estimated to contribute between £6,000 and £8,000 on average to the market value of fishing rights.

5.9 **Fishery-related businesses – Producers' surplus (sales minus production costs):** Some of the fishermen's expenditure goes to businesses that depend on salmon fishing for a large proportion of their income (such as for guides, ghillies, tackle dealers, boat hire and accommodation). If the fishery closed, the loss to each of these businesses is indicated by the income they receive from fishermen minus the costs of providing the goods or services they offer (including the cost of using their time and facilities in another way to generate income, i.e. **opportunity cost**).

In 2000, Can$83 million were spent by anglers fishing for Atlantic salmon in Canada on items related to fishing, including the amounts contributing to different fishing businesses such as lodging, guides, other fishing services, and fishing packages. An additional Can$81 million were spent by anglers on durable goods such as fishing tackle and boats, WSEV(03)10.

5.10 **Economy (Local/Regional/National) - from fishermen's expenditure: net output; impact on Gross Domestic Product (GDP):** The overall impact of fishermen's expenditure on the economy, whether local, regional or national, can be indicated by the **net output**. This is estimated by deducting the import content of the fishermen's expenditure within the defined area, whilst taking into account multiplier effects.

5.11 A **multiplier effect** arises when the impact of fishermen's expenditure is to generate additional expenditure on goods and services within the area under consideration, but excluding goods and services purchased from outside. So, for instance, the income to a fishing guide might enable him to employ a builder to repair his house, who in turn employs a mechanic to repair his van. A multiplier should only be applied if:

- the resources (particularly labour) in the area are less than fully employed; and
- similar expenditure would not be generated in the absence of the fishery.

In the 1970s, a study by the Economic and Social Research Institute estimated the economic impacts of both angling and commercial fishing for salmon in Ireland. The multiplier used was 1.6, WSEV(03)3 and WSEV(03)7.

The expenditure by salmon anglers in Iceland per year was estimated in 2001 to be US$600 per salmon caught, totalling in excess of US$15 million. It is not known what the import content of their expenditure was, but it is thought to be small. No multiplier was used in this study, but it is probable that one would have been applicable, WSEV(03)5.

In 1988, expenditure by salmon anglers in Scotland was estimated at £34 million and generating the equivalent of 3,400 full-time jobs, WSEV(03)3.

5.12 **Economy (Local/Regional/National) Export earnings – from visiting fishermen:** while the net output considers the impact of all fishermen whether resident or visitors, the **export earnings** relate only to the expenditure within a particular area by visiting fishermen.

Annually, about 1,500 anglers from 38 countries visit the Kola Peninsula in Russia to fish for salmon. In 2001, 16,321 salmon were caught and released. Overall revenues from fishing tourism were US$6 million, WSEV(03)3.

Commercial fishery

5.13 **Fishermen – Net yield:** For the fishermen, the profit they derive is simply the difference between the sales value of their catch and the costs they incur, such as equipment, fuel, licence fees. In comparisons of resource use or in estimating the loss that the fishermen would face if their fishery were closed, the opportunity cost of their time should also be considered. In other words, what could they earn if they were not salmon fishing? This should be included as a cost, and the value derived is called the **net yield**.

5.14 **Fishermen - Willingness-to-sell:** Even where fishing is primarily a commercial activity, fishing may be worth more to fishermen than their 'net yield'. This may be because they value the life-style offered by salmon fishing as opposed to, say, working in a factory. This additional value is equivalent to the recreational fishermen's consumers' surplus. A way of estimating the total value of fishing to commercial fishermen is to assess their **willingness-to-sell** their right to fish, either temporarily or in perpetuity.

In recent years, fishermen in both Greenland and the Faroes have agreed not to fish commercially, on a temporary basis, in return for compensation from fisheries interests in other countries. The benefits from the harvest of salmon will therefore be lost to the Faroes and Greenland but fisheries interests elsewhere, by paying compensation, will presumably derive similar or greater benefits.

5.15 **Fishery owners – Market value of fishing rights:** this value is exactly analogous to the value of fishing rights in a recreational fishery, if fishing rights are in private ownership.

5.16 **Fisheries-related industries, including processing and marketing – Producers' surplus (sales less production costs):** Those whose businesses involve the provision of goods or services to fishermen, or who process or market salmon (such as smokehouses) will also value the salmon. Their **producers' surplus** is analogous to the net yield of the fishermen.

5.17 **Economy (Local/Regional/National) – Net output:** For a commercial salmon fishery the contribution to the local, regional or national economy is indicated by deducting the import content of the costs incurred from the income generated from the final sales of fish. As with the net output from a recreational fishery, multiplier effects may be appropriate (see paragraph 5.11).

5.18 **Economy (Local/Regional/National) – Export earnings:** These are analogous to the export earnings of the recreational fishery (see paragraph 5.12).

Subsistence fishery

5.19 This is a type of fishing different from both recreational and commercial fishing, generally small-scale, that harvests fish for the fisherman and his/her family's own consumption, or where the fish caught are traded for other goods and services in the local community.

Notwithstanding the temporary closure of the commercial fishery in Greenland, a subsistence fishery still operates which the community is unwilling to forgo.

In 1990, the Supreme Court of Canada defined the First Nations' right to fish for food, as well as for social and ceremonial purposes. After conservation goals are met, this fishery takes priority over all other resource uses. Assessing the economic value of Atlantic salmon for Canada's First Nations has proved very difficult, though progress is being made on some aspects, WSEV(03)10.

5.20 **Fishermen – cost of alternative food/goods:** this expresses the replacement cost of the fish, or what it is traded in, if subsistence fishing is no longer possible.

5.21 **Fishermen/local community – willingness-to-sell (the right to fish):** In order to preserve a subsistence fishery (as a management goal), the value of the right to conduct subsistence fishing can be expressed or measured as the lost net benefits for other users of the salmon resource.

Eco-tourism

5.22 This use of the resource does not involve catching salmon, but involves viewing or otherwise experiencing the life of wild salmon, either at falls, fish ladders or 'information centres'. The activity can be both commercially organised or self-organised.

In Scotland, the Falls of Shin and the Pitlochry Fish Ladder attract substantial numbers of tourists. In Norway, there are businesses that take tourists on sub-aqua tours down salmon rivers specifically to view the salmon – outside the fishing season. Like whale-watching, it is possible that demand for such eco-tourism could grow, particularly if encouraged.

5.23 **Tourists' willingness-to-pay (net of their expenditure):** the value tourists place on their experience is indicated by their willingness-to-pay for it. Like anglers, they can be faced with a range of costs, including for travel, time, possibly a guide or an access fee. In general, these costs are less than their total willingness-to-pay. The difference between their willingness-to-pay and the tourists' actual costs are a measure of the tourists' consumers' surplus.

5.24 **Tourism-related businesses – tourists' expenditure (net of production costs):** Some of the tourists' expenditure goes to businesses that may depend on the salmon for a large proportion of their income such as guides, interpretation centres, transport and accommodation. The benefit to each of these businesses is indicated by the income they receive from tourists net of the costs of providing the goods or services they offer (including the cost of using their time and facilities in another way to generate income).

5.25 **Economy (Local/Regional/National) – from tourists' expenditure: net output, impact on GDP/Export earnings:** The net output and export earnings from tourist expenditure may be assessed on a similar basis to that of anglers' expenditure.

All fisheries (and other participatory activity including eco-tourism)

5.26 **General public – Option/Existence/Bequest values:** Even those who do not currently participate in a fishery may value it continuing. All these may be assessed as a willingness-to-pay, though in some circumstances, such as where the loss of a fishery is being contemplated, it may be more appropriate to estimate the value as a willingness-to-sell. **Option value:** The value derived from having the option to participate in a fishery. **Existence value:** The value of knowing the fishery exists, regardless of any future desire to participate in it. This may be significant where the fishery has strong cultural, social or heritage value. **Bequest value:** The value derived from knowing the fishery will exist for future generations.

5.27 **General public – externalities:** The value derived from the beneficial, social effects of others participating in the fishery. These may be manifested through reductions in crime or improvements in health.

Greenland has been keen to maintain its fishermen and fish processors in occupation, for the beneficial social impacts: simply paying fishermen not to fish and leaving them unemployed is not considered desirable.

There is evidence from the UK that recreational fishing helps reduce criminal activity. Activities that help reduce criminal activity can have a very real economic benefit as costs to the State can be substantial, e.g. in the UK it costs up to £160,000 per year of detention. In some countries, salmon angling might produce an economic benefit by reducing criminal activity.

The exercise associated with salmon angling may contribute to physical well-being. There may also be benefits in terms of relief of stress and improved productivity in the workplace following fishing trips or salmon-related tourism. Health benefits from consuming fish such as Atlantic salmon that have high Omega-3 fatty acid content are well documented.

The salmon itself

5.28 Regardless of any fishery, the salmon is valuable to society in other ways. It is what has been called a 'totem' species and is undoubtedly valued for itself, as part of the native fauna and as an indicator of environmental quality. Its appearance in art, literature, on coins, stamps, hotel signs, and coats-of-arms are a tribute to that interest. **General public - Existence/Bequest values:** These are analogous to the existence and bequest values associated with fisheries. However, their exact definition may depend on the specific management change being evaluated. Information on existence and bequest values is limited.

In England, the population living in the catchment of the River Thames indicated a willingness-to-pay of £12 million per year to re-establish a breeding population of salmon in the river. A similar evaluation for salmon in the River Wye indicated a value of £43 million per year. These estimates greatly exceed those derived for the fisheries, WSEV(03)7.

In the USA, there has been no commercial fishery for Atlantic salmon since 1948 and recreational fishing for sea run Atlantic salmon has been prohibited since 1995, yet the public in New England is supportive of conservation and restoration programmes for Atlantic salmon costing millions of dollars of public funds.

Genetic diversity

5.29 There is a growing recognition of the genetic value of wild Atlantic salmon. So far, it is unclear to what extent the gene pool, and specific elements of it, will become an object for commercial trading. Meanwhile, this value should be possible to measure using non-market techniques.

5.30 **Aquaculture businesses – option value of "wild stock genes":** in establishing its original broodlines, the aquaculture industry utilised the genetic diversity present in the wild stocks to develop strains with desirable characteristics for aquaculture. This industry may wish to use, or preserve the future possibility to use, some genetic feature in wild stocks which might increase the performance of salmon farming strains, such as disease resistance. The value it places on this can be measured by its willingness-to-pay for this possibility, net of their actual expenditure necessary to acquire them.

Definitions and measures of values (not fully expressed in monetary terms)

5.31 The Atlantic salmon has a number of social values to humans and their society such as psychological, health/physiological, cultural, historical and spiritual values. These might partly or fully be measured and included in monetary values. For instance, when anglers often state a high willingness-to-pay, one can assume that this high economic value to a large extent represents the multiple values to the angler and his or her surroundings from the activity. Such values include increased personal well-being, happiness and quality of life (psychological values), and opportunities to gather with family or friends (social values). Angling might represent a way of getting back to one's roots and to learn about Man's place in the ecosystem (cultural/spiritual values). Similar arguments can be made for other human uses and interactions with salmon as well.

5.32 While many of these values might indirectly be measured through anglers' willingness-to-pay, and fishermen's willingness-to-sell the right to fish, such values might not be adequately described in economic terms. In such matters, there exists a range of other measures and techniques based in the social sciences that are well established and could be of use in decision-making regarding Atlantic salmon.

Psychological questionnaires developed to measure people's perception of their quality of life can be adapted to measure the change in quality of life experienced by fishermen after they go fishing.

5.33 These techniques could replace economic measures, complement them (to get a better idea of what the values really are) or in some cases they might be the only relevant measures available to express specific human values attached to salmon. In addition, non-economic factors affect the direct economics of the different fisheries. The number of anglers and their desire for good fishing affect river leases/licence prices, as do their preferences (e.g. for fish number and size, environmental quality and services on river).

5.34 To assess social and psychological values, standard quantitative techniques from these disciplines such as survey techniques can provide data on user numbers, user group composition, user characteristics (demographic as well as other), and perceived benefits and outcomes. These techniques explore why fishing is important to them, and how they benefit from it, compared to other types of work or recreation, and also how these outcomes might depend on resource management and fish abundance. Possible physiological/health benefits may be measured using methods from medicine/sport research. These are examples of data that mostly will complement economic data about the value of the resource and its use. Surveys can also provide information on how involved interests view alternatives and substitutes to current activities based on salmon. This is as applicable to recreational fishing, commercial fishing and subsistence fishing, as it is to eco-tourism.

5.35 There is also a growing body of studies that use sociological, anthropological or other techniques to uncover more complex aspects of the human interaction with natural resources such as Atlantic salmon. Using in-depth interviews and text analysis can provide the only relevant understanding of the value/meaning of Atlantic salmon to indigenous people or to communities dependent on subsistence fishing, or the true spiritual value of a ceremonial fishery. The results of such inquiries are not presented in quantitative terms (numbers), but can often reflect the views of those stakeholders involved more adequately than numbers.

Natural resources have a very prominent place in indigenous cultures right across Canada. Marine resources, in particular, are important not only as a source of sustenance – food, shelter and other products – but also in the social fabric of many First Nations. For instance, fishing seasons provide opportunities for families to get together, for elders to teach young people their traditional ways. Fish are often an important component in many ceremonies, and are often mentioned in myths and stories that have been handed down through the generations. In short, the fishery is an important element of the cultures in First Nations and that importance is deeply ingrained. These values apply to other indigenous cultures around the North Atlantic.

5.36 Concerning values of historic/heritage character, the scientific traditions of disciplines such as ethnology, architecture and archaeology can be relevant to assess the values of an old fishery. Based on criteria such as uniqueness and age, the value of a fishery may be described and also compared to other types of fisheries or other types of historical values.

Analytical methods and data

5.37 Having described the monetary values associated with wild Atlantic salmon (Table 1), we can now briefly consider the analytical methods and the data that can be used to estimate those values.

5.38 The first step in estimating economic values is to conduct **market analysis**, and the first component of this analysis is consumers' surplus. Consumers' surplus is the difference between consumers' (e.g. ecotourists, recreational anglers, consumers of salmon products) willingness-to-pay for a good or service provided by the salmon resource and the actual expenditure required to acquire the good or service. Various analytical approaches have been developed for measuring consumers' surplus, but the most basic approach is to gather data that can be used to estimate demand for the good or service (i.e. the amount of the good or service that would be bought by consumers at different prices). This involves gathering various kinds of market data. The two most important kinds of data are:

- the total quantity of the good or service consumed (e.g. total number of recreational fishing days or fishing trips, quantity of salmon demanded for consumption, total number of visits to a salmon hatchery); and
- the price paid by consumers for the good or service.

Additional information that might be sought includes:

- total and average disposable income (i.e. after taxes) of consumers;
- the price of substitute and complementary goods and services; and
- various consumer characteristics at the aggregate level that help provide information on the social aspects of interest (e.g. ethnic group, education, age, sex, place of residence, and aspects of the good or service that are important to consumers).

5.39 The second component of market analysis is producers' surplus. Producers' surplus is the difference between the revenues actually received by firms that supply the good or service provided by the salmon resource and the cost of producing it (e.g. fishing boats, gear, fuel, wages for fishing guides). As with consumers' surplus, the most basic approach is to gather data that can be used to estimate supply. The most important data are:

- the total quantity of the good or service produced;
- the price received by firms per unit of the good or service;
- the total quantities and costs of inputs to production (including the opportunity cost of labour and capital) and provision for a normal rate of return.

Additional information that might be sought includes:

- various characteristics of firms at the aggregate level (e.g. number of firms in different size or gear categories, or in different locations, as well as the characteristics of these locations).

5.40 The second type of analysis that is needed is **net output analysis**, which can be used to estimate local, regional or national economic impacts. The same kind of data used to calculate consumers' and producers' surplus is needed here, but the data must be collected at the level of individual producers and consumers, rather than at the aggregate level.

In particular, along with the prices for goods and services related to recreational and non-extractive uses of the salmon resource, more specific disposable income data must be collected. Instead of a total or average measure of income for all consumers the wage rate or salary level of the individual needs to be measured to use as a budgetary constraint on consumption. For extractive commercial uses, input and output prices and production levels need to be collected at the individual firm level to ensure an objective estimate of producers' surplus. In both cases, the abundance of the stock is an important explanatory variable that ensures comparability.

5.41 The third type of analysis needed is **analysis of participation**. While this analysis is not necessary for estimating existence and bequest values for different uses, it is necessary for estimating option values and the market value of fishing rights.

Examples of the data to be gathered here include:

- entry and exit behaviour of firms (e.g. number of outfitters that enter or exit the market for recreational fishing or the number of commercial fishing firms that enter or exit the market);
- participation rates in the recreational fishery; and
- participation rates in eco-tourism.

5.42 Finally, to ensure comparability with other surveys over a number of years or areas, the final type of analysis needed is **biological analysis** (e.g. stock assessment), which can be used to link economic values and impacts to the underlying resource. For example, if a survey was conducted in Scotland to estimate recreational value in a particular year and a similar study was conducted in the US the following year, salmon abundance may have changed over time, implying different expected catch rates on the part of the survey respondents. Knowing this allows adjustment of the monetary estimates in Scotland and the US to make them comparable. However, many other factors may affect the economics.

6. Values expressed in monetary terms

6.1 The Workshop recognised that many of the facets of the value of wild salmon could be, and had been, expressed in monetary terms. A list of these values is given in Table 1. The Workshop agreed that a critical examination of estimation methods and consideration of standard methods was not possible here and would need to be undertaken over a longer period of time. However, some general guidance on the analytical methods and the data that could be used in order to assess values that can be assessed in monetary terms is given in paragraphs 5.37 to 5.42 of this report.

7. Values that have not been estimated in monetary terms

7.1 The Workshop recognised that some of the facets of the value of wild salmon may not be fully expressed in monetary terms and agreed that consideration of standard methods for assessing these values was not possible here and would need to be undertaken over a longer period of time. However, some general guidance on the approaches that could be used in order to assess these values is given in paragraphs 5.31 to 5.36 of this report.

8. Development of an international framework/template for assessing social and economic values

8.1 NASCO has recognised that resolving how social and economic factors can be included in implementation of a Precautionary Approach to salmon conservation, management and exploitation without negating its effectiveness will require careful consideration. The Workshop recognised that management of Atlantic salmon fisheries under a Precautionary Approach to date had focused on the establishment of conservation limits (or other measures of abundance) and management targets. While conservation limits would be determined by biological considerations alone, management targets would also include consideration of social and economic factors. An illustration of the latter would be using social and economic analysis to assist managers in determining an appropriate timeframe for stock rebuilding. Social and economic factors might also provide important arguments in favour of conservation.

8.2 An example of a bio-economic model, which had been developed and used in the United States, was presented. This model integrated biological, social and economic aspects so that these could be included in management decisions. The model had been applied to the shrimp fishery and was in the process of being applied to the red snapper fishery. It allows revenues, costs and changes in fishing effort in response to changes in stock abundance to be projected over long time periods (100+ years) and demonstrates the effects of various management options on the fishing fleets and fisheries. The Workshop welcomed this model and agreed that if at some future date it could be adapted to Atlantic salmon, it might assist the SCPA in considering approaches for incorporating social and economic factors in decisions on management of Atlantic salmon fisheries under a Precautionary Approach.

8.3 It was recognised that some of NASCO's Contracting Parties have limited expertise in social and economic assessments and the Workshop recommends that there might, therefore, be benefits from continued cooperation between the Parties on these issues.

8.4 The Workshop considers that it has:

(a) developed a list of all the major elements making up the economic value and economic impact of wild salmon and an indication of who benefits from these values (see Table 1);

(b) developed an indication of the data that needs to be collected in order to assess those values that can be expressed in monetary terms (see paragraphs 5.37 to 5.42);

(c) developed broad guidelines on the type of economic analyses that would need to be applied to these data in order to produce estimates of these elements of value (see paragraphs 5.37 to 5.42).

(d) suggested a number of other elements where salmon bring value to human society but which are difficult or impossible to value monetarily (see paragraphs 5.31 to 5.36).

8.5 We consider that, just as NASCO has sought, for example, to ensure that catch statistics are comparable across the Atlantic, it would be extremely valuable to aim to ensure that estimates or assessments of social and economic values produced by each Party are also broadly comparable and are not produced using a completely different set of assumptions or methodologies.

8.6 Accordingly, the Workshop believes that the use of all the factors described in paragraphs 8.4(a) to (d) above creates a basis for a framework/template for assessing the economic and social values of wild salmon stocks. It therefore recommends that where NASCO or its Contracting Parties decide to go further into assessing economic and social values (whether Atlantic-wide, nationally, regionally or locally) all of the factors identified in paragraph 8.4 above be considered and taken into account where they apply.

8.7 The salmon may be unique among the fishes in the wide range of values it generates. It has a hold on human imagination that covers many sectors of society, even those who never fish and never wish to fish. This is a great asset but it is also a problem because the species can, therefore, be undervalued in some economic contexts where "existence" and "bequest" values are overlooked. We suggest, therefore, that the SCPA urges administrators and others concerned with decision-making on, for example, habitat, aquaculture, road building, hydropower, etc. to ensure that these difficult-to-measure, but very long-lasting and widespread, benefits are fully incorporated in decisions and given due weight.

8.8 The Workshop notes that although there is a significant amount of economic information in the literature on wild salmon, it has never been integrated into the kind of structure shown in Table 2. The background papers for the Workshop contain much valuable information on the social and economic values of Atlantic salmon and the Workshop commends these papers to the SCPA. Copies of these papers are available from the NASCO Secretariat. However, Table 2 is incomplete and the SCPA may wish to consider whether it wishes to encourage the collection of more complete information on economic and social values, for inclusion in this table, so as to inform decision-making. References to studies conducted to assess these values might also be included in the table. It is particularly noticeable that elements which, because of the widespread human interest in the salmon, may be the greatest contribution to its value, are very poorly represented in the literature. There may be real benefits to developing a better understanding both of the conventional economic impacts and of the "existence" and "bequest" values.

8.9 It is important to recognise that an assessment of current economic and social values cannot be taken as a guide to how these values will change as the result of regulatory or other changes. Evaluation of the consequences of such changes will require a greater understanding of the relationships between social and economic values and the abundance of salmon.

In Conclusion

8.10 The Workshop has not attempted to proceed to the next step, to consider how social and economic factors can be incorporated into the Precautionary Approach. We have considered what the elements of value are and how they can be assessed. Nevertheless, we take the view that NASCO and its Contracting Parties should consider aiming at a position where social and economic advice can be merged with biological advice to produce a more informed basis on which to take management decisions. Thus, ways should be found to integrate social and economic information collected in a more conscious and transparent way, so that it becomes more meaningful and can play an increasing role in decisions on salmon management. The Workshop considers that such a management tool would be critical to evaluating management options and noted that a clear articulation of management objectives is essential. A simplified illustration of a salmon management process incorporating social and economic factors is shown in Figure 1.

8.11 The timeframe for improving the knowledge base on social and economic issues should be considered by the SCPA. The development of an action plan for conducting such work and reporting the results to NASCO should also be considered. The SCPA might also wish to consider the need for a cooperative pilot study to review the information in Table 2, complete the gaps in the data and, using Table 1 as a basis, build a more comprehensive overview of the economic and social values of the Atlantic salmon. This could be a desk study and need not be expensive.

8.12 Finally, we believe that the dialogue which took place in our Workshop between those concerned mainly with the management, administration or biology of the salmon and those more knowledgeable about economics, who brought insights about social and economic values, has been highly instructive. This has been a first step and we hope that the SCPA will decide to further encourage such a dialogue.

Table 2: Overview of existing knowledge/data/studies of the social and economic values of wild Atlantic Salmon*

Values / Country	USA	Canada	Greenland	Iceland	Faroe Isl.	Norway	Russia	UK (Scot)	UK (E & W)
Economic value									
Use	r	r		r		r		RC	R
Non-use	x	x				X			
Economic impacts									
Direct		RC	C	R	c	rc	r	R	RC
Indirect		r				r		R	
Cost/benefit		rc				r			R
Social and cultural benefits									
Psychological	r					r			
Social	r					rc			
Cultural/indigenous peoples		s?				s?			

Values / Country	UK (NI)	Ireland	Finland	Sweden	Denmark	Germany	France	Spain
Economic value								
Use		r	R	r	r			
Non-use								
Economic impacts								
Direct		R						
Indirect		R						
Cost/benefit								
Social and cultural benefits								
Psychological								
Social								
Cultural/indigenous peoples								

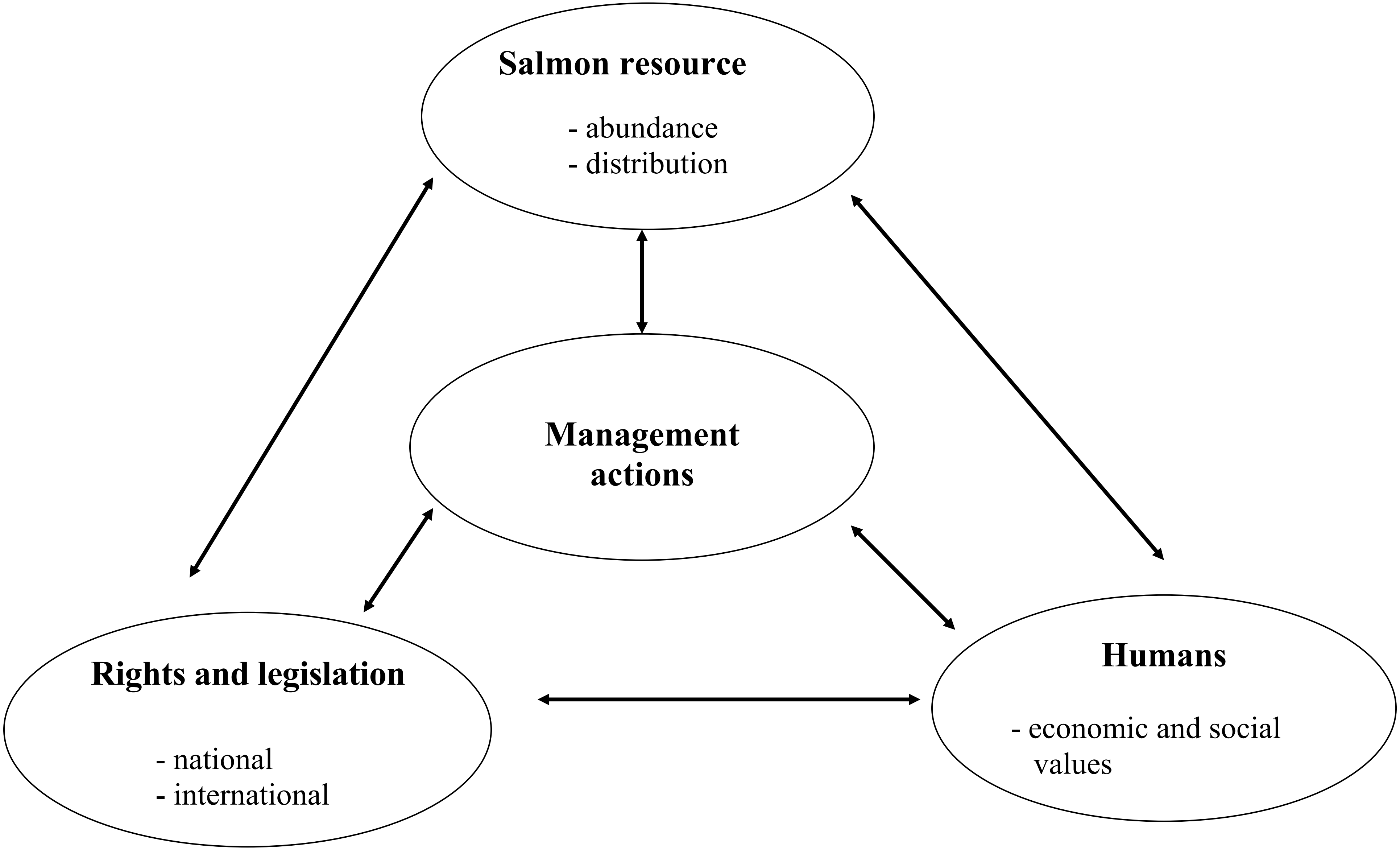
* This table focuses on studies of Atlantic salmon, but it is recognised that studies of other fish resources or other environmental issues provide useful information for enhancing knowledge of the social and economic values of Atlantic salmon. The table is incomplete and may be added to by each of the countries listed.

Legend: Relevance of study — Significant: R/C/S; Minor: r/c/s

R C S indicate recreational, commercial or subsistence

X indicates non-use value ? indicates uncertainty

Figure 1 : **A simplified illustration of a salmon management process incorporating social and economic values**



8.13 The costs involved in assessing social and economic values should be kept in proportion to the changes in the resource being evaluated. The costs of collecting the relevant data can be minimised by incorporating their collection, as far as possible, into the collection of catch data.

9. Any other business

9.1 There was no other business. The Workshop expressed its appreciation to the Chairman for his excellent work and to the economists present for the expertise which they brought to the meeting.

10. Consideration of the report of the meeting

10.1 The Workshop agreed a report of the meeting.

List of Participants

Canada

Dr Gorazd Ruseski	Department of Fisheries and Oceans, Ottawa

Denmark (in respect of the Faroe Islands and Greenland)

Dr Jan Arge Jacobsen	Fisheries Laboratory of the Faroes, Torshavn
Mr Lars D Madsen	Greenland Home Rule, Nuuk
Mr Hedin Weihe	Ministry of Fisheries, Torshavn

European Union

Mr David Dunkley	Scottish Executive Environment and Rural Affairs Department, Edinburgh
Dr Guy Mawle	Environment Agency, Bristol

Iceland

Mr Arni Isaksson	Directorate of Freshwater Fisheries, Reykjavik

Norway

Mr Oystein Aas	Norwegian Institute for Nature Research, Lillehammer
Mr Raoul Bierach	Directorate for Nature Management, Trondheim

USA

Ms Kimberly Blankenbeker	National Marine Fisheries Service, Silver Spring
Mr John Ward	National Marine Fisheries Service, Silver Spring

Secretariat

Dr Malcolm Windsor (Chairman)	Secretary
Dr Peter Hutchinson	Assistant Secretary

Annex 2 of WSEV(03)12

WSEV(03)13

Technical Workshop to Develop a Framework for Assessing the Social and Economic Values Related to Wild Salmon

21-24 January, 2003
Edinburgh, UK

Agenda

1. Introduction

2. Nomination of a rapporteur

3. Adoption of the Agenda

4. Consideration of the Project Proposal (Terms of Reference)

5. Development of an inventory of available information on social and economic values related to wild Atlantic salmon

6. Values expressed in monetary terms:

   (i) critical examination of the estimation methods used;
   (ii) consideration of standard methods

7. Values that have not been estimated in monetary terms:

   (i) consideration of standard methods;
   (ii) consideration of the need for, and feasibility of, pilot projects to produce monetary estimates

8. Development of an international framework/template for assessing social and economic values

9. Any other business

10. Consideration of the report of the meeting

11. Close of the meeting

ANNEX 22

Council

CNL(03)54

Preliminary NASCO Guidelines on the Use of Stock Rebuilding Programmes in the Context of the Precautionary Management of Salmon Stocks

CNL(03)54

Preliminary NASCO Guidelines on the Use of Stock Rebuilding Programmes in the Context of the Precautionary Management of Salmon Stocks

Background

In 1998, NASCO and its Contracting Parties agreed to apply a Precautionary Approach to the conservation, management and exploitation of salmon. The NASCO Agreement states that the application of a Precautionary Approach requires:

- all salmon stocks in the NASCO Convention Area to be maintained above their conservation limits (CLs) by use of management targets (these should be set for each river and combined as appropriate for the management of different stock groupings defined by managers); and

- **stock rebuilding programmes** (including, as appropriate, habitat improvement, fishery management actions, and stock enhancement) to be developed for stocks that are below their CLs.

The inclusion of 'stock rebuilding programmes' within the NASCO Agreement reflects similar clauses in other agreements on the Precautionary Approach (e.g. UN Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks). This document provides guidance on the overall process of establishing a Stock Rebuilding Programme for a salmon stock and what such a programme might consider and contain.

Stock Rebuilding Programme Outline:

1. Compliance assessment:

1.1 **Nature of CL compliance failure:** The type and extent of the management actions required will depend upon the nature of the compliance failure (e.g. failure by more than X% for more than Y years) and the factors affecting that assessment. Clearly, the further that a stock falls below its CL and the more years for which it does this, the greater the probable need for management action.

1.2 **Risk assessment:** The numbers of salmon returning to spawn can be highly variable and so the stock will sometimes fall below the CL simply as a result of natural variation. In addition, information on the stock may be limited, so there may be great uncertainties about both the CL and the current stock abundance. A risk analysis will therefore be required to evaluate this uncertainty in the assessment.

1.3 **Recent compliance history:** Where the stock falls below the CL for only a single year (or a very short period) consideration might also be given to the margin by which the CL was exceeded in earlier years. If the stock has been well above the CL in recent years this may suggest that the current management practices are appropriate under most normal circumstances and there may be less reason to consider extensive management changes.

2. Evaluation of the problem:

2.1 **Assessment of causes:** Stocks may fall below their CLs as a result of reduced production and/or increased mortality, and both can result from natural or anthropogeneic factors (including fishing). The possible causes of compliance failure may be assessed under the following headings:

- **Natural environmental change:** including rainfall and river flow patterns, river temperatures, sea surface temperatures, marine currents;

- **Habitat degradation:** including water quality (including sub-lethal effects), water chemistry (e.g. pH), water quantity caused by man-made structures or extractions, spawning and juvenile habitat (e.g. sediments and reduced carrying capacity), factors affecting food production, obstructions to smolt or adult migration (and entrainment), fish farming;

- **Interactions:** including fish/bird/mammal predators in sea/freshwater, diseases and parasites (e.g. sea lice), competition with native species, competition with introduced species (e.g. stocking effects); wild/farmed fish (e.g. fish farms);

- **Exploitation:** including by-catches of post smolts, marine salmon fisheries, by-catches in homewater fisheries, directed homewater net and rod fisheries, non-catch fishing mortality, exploitation of prey species.

2.2 **Differential effects on stock components:** stock components may be affected in different ways by different factors and it is important to identify those components in greatest need of protection or restoration. For example, age groups may be differentially affected by fisheries which are size selective, and tributary populations may be differentially affected by water quality problems.

3. Development of management plan:

3.1 **Remedial measures:** management proposals should be developed on the basis of a full assessment of the problems. The following factors should be considered in developing a programme of remedial measures:

- **Environmental change:** proposals for remedial measures must take account of best predictions of the likely duration and extent of any environmental change, and whether the environmental change is likely to progress further. Thus if continuing deterioration of environmental conditions is predicted, this should be taken into account in planning management actions;

- **Habitat degradation:** decisions on remedial habitat work should be based on identification of whether the cause of a production bottleneck is natural or man-made (NB it may not be appropriate to try to reverse natural changes), and whether the effect is reversible (irreversible changes may require reassessment of the CL); [Cross reference to Action Plan for Habitat Protection and Restoration]

- **Interactions:** the potential impact of predators should be assessed taking into account known characteristics of salmon and predator biology and population dynamics; possible sources of disease from wild and reared stocks should be evaluated, and the effects of any stocking programme, with salmonids or other species, and any changes in stocks of other native species considered;

- **Exploitation:** the need for exploitation control should be determined based upon an assessment of how fisheries are contributing to the stock decline and their longer term sustainability; exploitation control may only be required while other problems are remedied, but if environmental conditions have changed there may be a need for a long-term readjustment of harvest strategies. [Cross reference to Decision Structure]

3.2 **Develop management programme:** The possible management measures should be developed into a programme, and action taken to ensure all activities are themselves precautionary. This should include predictions of the expected effects of the proposed measures and the estimated rebuilding trajectories for the stock returning above the CL. This will permit an assessment of the effectiveness of the measures, which is a further requirement of the application of a precautionary approach.

4. Interim measures

4.1 **Stocking:** Consideration should be given to the need for stocking, where appropriate, or in order to circumvent particular stock bottlenecks, although this should generally only be considered as an <u>interim</u> stock protection measure. [Cross reference to Stocking Guidelines]

4.2 **Interim reference points:** Where the stock has fallen well below the CL or has been below the CL for an extended period, it may be appropriate to consider an intermediate 'recovery' reference point or to set a goal of an annual average percentage increase. This may be required where CLs are unattainable in less than one full generation for one or more stocks.

5. Socio-economic factors

5.1 All Management Proposals should be evaluated against socio-economic considerations. Managers might also have to consider whether there is a need to permit a residual fishery to continue (e.g. catch and release angling or heritage netting) for socio-economic reasons. [Cross reference to guidance on socio-economic evaluation methods]

6. Monitoring and evaluation of progress:

6.1 Project timescales should be developed with interim targets and deliverables.

6.2 Progress should be assessed against the predictions for the different management measures, including trajectories for stock recovery, and objectives should be reviewed at intervals during the recovery process.

6.3 Data collection programmes should be put in place to permit appropriate progress evaluation.

7. Reporting

7.1 **Request from NASCO:** Information should be reported annually to NASCO on the use of the *Guidelines on the Use of Stock Rebuilding Programmes* under the following headings:

- Provide a summary of the stocks for which the Guidelines have been used;
- Indicate where/how Stock Rebuilding Programmes have been compiled and retained;
- Provide comments on how useful managers have found the Guidelines and suggestions for how they might be improved.

7.2 **Examples:** Parties should provide examples of Stock Rebuilding Programmes for sample rivers for the information of others.

ANNEX 23

Council

CNL(03)20

Unreported Catches – Returns by the Parties

CNL(03)20

Unreported Catches – Returns by the Parties

Summary

1. The Council has previously agreed that the Parties should be requested to provide, on an annual basis, information in relation to unreported catches, and has welcomed the progress made in transparent presentation of this information. For 2002, new information on the management control and reporting systems for the Faroe Islands recreational fishery has been provided and Ireland has reported that the carcass tagging and logbook scheme introduced in 2001 has led to a decrease in unreported catch in 2002. No changes have been reported by the other Parties. In 2002, between 838-1,158 tonnes were estimated to be unreported compared to a provisional declared catch of 2,621 tonnes, i.e. the estimate of unreported catch is between 32-44% of the reported catch. The estimate of unreported catch for 2002 represents a reduction on the estimate for 2001 (962-1,374 tonnes), although as a proportion of the reported catch there is no change.

2. More than 118,000 salmon were released following capture in recreational fisheries in 2002, although catch and release angling is not practised in all countries and in some countries no statistics are available on the extent of its use.

3. A number of new measures to minimise the level of unreported catch have been reported, including educational initiatives in the USA and Greenland; in Sweden, there is increased control over fisheries in river mouths and assessment of catches in trap and net fisheries which are not obliged to report catches; and the closure of a fishery in the Archangel Region of Russia which had a particular problem of unreported catches. Some additional initiatives have been reported that will be implemented in 2003.

4. Last year the Council welcomed the progress made by the Parties in relation to reducing the level of unreported catches but emphasised the need to take stronger measures to minimise the level of such catches. The Council also agreed that there was a need for the Contracting Parties to further clarify the methods used to estimate unreported catch and the reliability of these estimates, and to consider opportunities to enhance harmonisation of approaches used. As in previous returns, some information has been provided on the methods used to estimate unreported catch. Two Parties have given an indication of the uncertainty associated with their estimates. A more detailed evaluation of the methods used to estimate unreported catches is contained in the scientific advice from ICES for 2000, CNL(00)12. The Council is asked to consider what, if any, additional actions it wishes to take in relation to unreported catches. The Secretary will continue to request information on unreported catches, referred to in paragraph 1 above, on an annual basis.

5. At the time of preparation of this paper, information had not been received from all EU Member States (Denmark, France and Spain) which have salmon interests.

Secretary
Edinburgh
2 May, 2003

1. Description of management control and reporting systems by country

Denmark (in respect of the Faroe Islands and Greenland)

Faroe Islands

In the Faroe Islands there is currently no reporting system regarding sport fishing for salmon. The Sport Fishermen's Association works on estimates of catches for its own purposes. There are plans to introduce a reporting system (see section 5).

European Union

Ireland

The carcass tagging and logbook scheme introduced in 2001 has resulted in an increase in the reported catch in 2002 over the previous five-year period and, therefore, a corresponding decrease in the unreported catch. Up to 2000, the catch statistics were derived from recorded sales by licensed salmon dealers. As a result of the introduction of the carcass tagging and logbook scheme, it is possible to estimate the proportion of the catch not sold through licensed dealers and, therefore, to assess the validity of previous estimates of unreported catch.

Other Parties

No changes to the management control and reporting systems were reported by the other Parties or by Greenland. Descriptions of these systems were presented in document CNL(00)19 and CNL(02)19.

2. *Estimate of unreported catch by country, broken down by category and indicating whether the unreported catch is the result of legal or illegal activities*

Party	Estimate (tonnes)	Breakdown
Canada	84	Illegal activities. Estimated by enforcement, management and biological staff. Labrador - 4 tonnes; Newfoundland - 45 tonnes; Quebec - 34 tonnes; Gulf and Scotia Fundy Regions - <1 tonne each. For 2002 the values for Labrador and Newfoundland are assumed to be same as in 2001. There are no reports from New Brunswick or from 2 of the 5 fishing areas in Nova Scotia.
Denmark (in respect of the Faroe Islands and Greenland)		
Faroe Islands	1	The Sports Fishermen's Association issues licences to each sports fisherman in certain areas of fishing activity. At present there is no regulated reporting system for sports fishing for salmon. The unreported catch is the result of legal activities. This estimate is based only on information from the Sports Fishermen's Association.
Greenland	Approx. 10	Originates partly from the fishery for home consumption and partly from the commercial fishery which is sold at local markets, hotels, etc. In total 93 licences for Atlantic salmon fishing were issued to professional fishermen, but only a total of 24 licences were reported active. 2 persons reported sale of Atlantic salmon without having any licence, but these cases are still under administrative inquiry. In 2002 neither the Wildlife and Fisheries Officers of GFLK nor the fisheries inspection vessels of the Royal Danish Navy have reported any incidents of illegal fishing for Atlantic salmon in Greenland.
European Union		
Finland	15	In-river fisheries, mostly legal, reliability evaluation very difficult.
Ireland	68	Mainly illegal catch.
Sweden	2.8	Approximately 10% of catch. Largely the result of legal activities (see CNL(01)19 for further details) but poaching probably contributes to a minor extent. It is believed that new fishery regulations in recent years have reduced the proportion of the catch that is not reported.
UK – England and Wales	31	Estimates are not made for separate categories of unreported catch. The total is calculated using the percentages in Table 3.
UK – Northern Ireland	3.2	Figure for commercial net fisheries in Northern Ireland. This figure has dropped significantly from earlier years largely as a result of the introduction of carcass tagging in 2001/2002.
UK – Scotland	45	Legal and illegal components.
Iceland	1.8	-
Norway	550 (uncertainty ± 140 tonnes)	Illegal catch in the sea: 140 tonnes By-catch in commercial sea fishing: 25 tonnes Legal catch in sea by bag-net and bend net: 110 tonnes Legal catch in sea by angling: 110 tonnes Illegal catch in rivers: 25 tonnes Legal catch in rivers, mainly by angling: 140 tonnes
Russian Federation	166-206	Legal coastal fishery: 2-4 tonnes Illegal coastal fishery: 6-12 tonnes Legal in-river fishery: 8-10 tonnes Illegal in-river fishery: 150-180 tonnes
USA	0	
TOTAL	838 – 1,158	

3. Explanation of how the figure for unreported catch is arrived at

Party	Explanation of how the figure for unreported catch is arrived at				
	Absence of a requirement for catch statistics to be collected	**Suppression of information thought to be unfavourable**	**Local sale or consumption**	**Innocent inaccuracy in making returns**	**Illegal fishing**
Canada					Unreported catches are estimated by enforcement, management and biological staff.
Denmark (in respect of the Faroe Islands and Greenland)					
Faroe Islands			The unreported catch is used for local consumption.		
Greenland	All catches must be reported to Greenland Fisheries Licence Control (GFLK).	Not available.	Catches are landed to local markets, sold privately or kept for home consumption. Due to the scattered nature of the fishery, recordings of landings are considered incomplete.	Not available.	The unreported catches are mostly legal.
European Union					
Finland	Licensed fisheries without requirement to report catch. Extrapolation from reported catch used to estimate total catch. An additional margin has been included in the estimate of unreported catch of 15 tonnes.				Thought to be small but difficult to evaluate. Only a guess-estimate.
Ireland	Not applicable – all catches must be declared in logbooks.	This is unlikely given the presumption of buyouts, quotas or set-aside in recent years.	It is obligatory to provide details of all disposals of salmon landed in Ireland.	This may occur but will reduce as familiarity with the carcass tagging logbook scheme increases.	Difficult to assess accurately, based on accounts from local sources (fishery inspectors, fishermen). Thought to represent most of the unreported catch and is believed to be at a low level presently.

Party	Explanation of how the figure for unreported catch is arrived at				
	Absence of a requirement for catch statistics to be collected	**Suppression of information thought to be unfavourable**	**Local sale or consumption**	**Innocent inaccuracy in making returns**	**Illegal fishing**
Sweden	A large proportion of the unreported catch.	To some limited degree because of minor catches which are believed to be unreported for tax reasons.	Less than 30% of the total unreported catch.	Under-estimation of catch is not a common source of unreported catches. Catches are as likely to be over-estimated.	Important factor in a few rivers and river mouths where illegal fishing may occur without proper control of the fishery.
UK - England and Wales	Not applicable.	6% of declared net catch.	No separate estimate.	Figure of 10% of declared rod catch; may be reviewed in the light of issuing second reminders in 2001 and 2002.	12% of total declared catch.
UK - Northern Ireland	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.
UK - Scotland	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.
Iceland	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.
Norway	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.
Russian Federation	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.	No change - see CNL(01)19.
USA *	As a condition of having a federal fishing permit, reporting of bycatch is required. There were no reports of Atlantic salmon in the mandatory logbooks completed and returned by fishermen. In addition, observers are placed on some fishing vessels to provide a third party estimate of bycatch. No observers documented a bycatch of Atlantic salmon in any fishery in 2002.	There is no evidence that this is occurring. In the past, there have been reports made of Atlantic salmon bycatch.	There is no evidence that this is occurring.	Fisheries observers are trained in species identification, which should reduce the potential for misidentification.	On occasion, there are reports of potential recreational poaching in the rivers. When such reports are made, law enforcement personnel increase their presence on the river. There were no documented poaching activities in 2002.

* Unreported catch estimated to be zero.

4. The extent of catch and release fishing

Party	Estimated Number Released	Comment
Canada	54,425	Preliminary numbers: 35,661 small salmon; 18,764 large salmon. (Estimate for 2001 increased from 56,597 as reported last year to 58,961).
Denmark (in respect of the Faroe Islands and Greenland)		
Faroe Islands	0	There is not catch and release fishing in the Faroe Islands.
Greenland	0	
European Union		
Finland	Negligible.	
Ireland	No statistics available.	Only practised in limited circumstances on a small number of fisheries and no assessment has been made to date.
Sweden	No statistics available.	Catch and release fishing is practised in a few rivers in order to improve the protection of females before and during the spawning period.
UK - England and Wales	7,632	Provisional estimate for 2002 is 50% of rod-caught fish released (including voluntary and compulsory catch and release).
UK - Northern Ireland	No estimate provided.	Total "catch and release" for spring salmon introduced in Fisheries Conservancy Board area in 2002 from start of season to 31 May.
UK - Scotland	25,352	41% of all salmon caught by rod and line were subsequently released.
Iceland	5,576	16.3% of all rod-caught salmon.
Norway	0	The extent of catch and release fishing is sporadic and accidental.
Russian Federation	25,248	79.6% of the total catch by rod. This information is estimated on the basis of information sent to the relevant authorities.
USA	0	There is no directed catch and release fishing for sea-run Atlantic salmon in the US.
TOTAL	118,233	

5. *Any measures taken to further minimise the level of unreported catches*

Party	Measures taken
Canada	No new measures. The Province of Quebec has developed an on-line catch reporting system to provide real-time data; this system will begin in 2003.
Denmark (in respect of the Faroe Islands and Greenland)	
Faroe Islands	No new measures. The Ministry of Fisheries is planning to introduce a reporting system based on inspection from the Sports Fishermen's Association. More details will be provided in next year's returns.
Greenland	No new measures. Wildlife and Fisheries Officers of GFLK make random checks at local markets in towns and settlements along the West coast. GFLK officers have made random checks at hotels, restaurants, butchers shops, hospitals and schools in various towns in order to compare purchases of salmon with reported catches. To avoid the presumed underreporting of the catches for home consumption and for local open markets, more information on the rules and procedures of salmon fishing has been made available to fishermen and the municipalities.
European Union	
Finland	No new measures.
Ireland	No new measures. Continued implementation of carcass tagging and logbook scheme introduced in 2001.
Sweden	New fishery regulations have improved the possibilities to control fisheries in river mouths. Furthermore, investigations are underway of traditional traps and net fisheries in three rivers where there is no obligation to report catches.
UK - England and Wales	No new measures.
UK - Northern Ireland	No new measures. The salmon tagging and logbook scheme introduced in 2001 should provide accurate catch statistics of angling and commercial fishery exploitation.
UK - Scotland	No new measures.
Iceland	No new measures.
Norway	No new measures.
Russian Federation	In 2002 fishing for salmon with gill nets was closed on the Severnaya Dvina river (Archangel Region). Only set and trap nets were used. This measure helped to considerably reduce unreported catch in the estuary of the Severnaya Dvina (ratio between reported and unreported catch was 1:0.85 in 2002 against 1:2.9 in 2001.
USA*	Educational efforts are continuing to ensure that recreational anglers can identify Atlantic salmon and are aware of the fishing restrictions. Particular emphasis has been placed on distinguishing between trout and juvenile Atlantic salmon to reduce bycatch at the early life stages.

* Unreported catch estimated to be zero.

ANNEX 24

Council

CNL(03)22

Returns Made Under the Oslo Resolution

CNL(03)22

Returns Made Under the Oslo Resolution

1. The Resolution by the Parties to the Convention for the Conservation of Salmon in the North Atlantic Ocean to Minimise Impacts from Salmon Aquaculture on the Wild Salmon Stocks (the "Oslo Resolution") was adopted by the Council in 1994. Under Article 5 of the Resolution each Party is required to provide to the Organization, on an annual basis, information of a scope to be determined by the Council concerning measures adopted under Article 2 (measures to minimise genetic and other biological interactions), Article 3 (measures to minimise the risk of transmission of diseases and parasites to the wild stocks of salmon) and on research and development (Article 4). A format for the return of information was agreed in 1995 and the first returns (covering the calendar year 1995) were presented to the Council at its 1996 Annual Meeting. In 1998 the Council adopted a revised format for the returns by the Parties under the Oslo Resolution so as to ensure that the Organization has available to it comprehensive information concerning the measures in force when deciding if additional measures to those contained in the Oslo Resolution may be necessary.

2. At its 2000 Annual Meeting the Council had agreed that it wished only to be advised of new measures. Therefore measures reported in earlier years have not been reported here but the information returned to the Organization in these and all earlier returns has been incorporated in a database. The entries in the database indicate, where appropriate, that while a Party may not have reported any new measures in a particular year, previously reported measures still apply. For 2002, some Parties have also reported on the development of regulations and standards that will come into force in 2003 or 2004. These are not included here since it is assumed that they will be included with the returns for those calendar years. It should be noted that not all forms of aquaculture are practised by all Parties. For example, Greenland has no aquaculture. At the time of preparation of this paper, no return of information for 2002 was available for the Faroe Islands and for some EU Member States with salmon interests (Denmark, France and Spain).

3. The report on the Standing Committee on the Precautionary Approach's meeting on application of the Precautionary Approach to aquaculture, introductions and transfers and transgenics is contained in document CNL(03)17. This report contains reviews by the Parties and the Secretariat on the consistency of NASCO's agreements with the Precautionary Approach and the SCPA's recommendations.

Secretary
Edinburgh
2 May, 2003

1. General Measures

1.1 Sites

1.1.1 Sites only to be assigned for aquaculture where hydrographical, epidemiological, biological and ecological standards can be met

Canada

New Brunswick and Fisheries and Oceans Canada have been studying the relationship between hydrography and fish health (epidemiology) for ISA.

No new measures reported by the other Parties.

1.1.2 Siting of units to avoid risk of damage by collision

No new measures reported by any Party.

1.1.3 Adequate marking of aquaculture units

No new measures reported by any Party.

1.2 Operations

1.2.1 Management of aquaculture units to prevent and control diseases and parasites

European Union

Ireland

Aquaculture protocols have been agreed for sea lice management, sea lice monitoring, benthic monitoring and fallowing.

Sweden

The parasite *Gyrodactylus salaris* was found in a Swedish rainbow trout farm located on the border river to Norway, Enningdalsälven. The farm is now empty and the permit to cage rear rainbow trout in the system has been withdrawn. This decision has been appealed by the farmer and higher courts have not yet made a final decision.

USA

The US Department of Agriculture (USDA), the Maine Department of Marine Resources (DMR), and industry continue ISA surveillance and epidemiological research at all US farm sites. All aquaculture equipment and vessel traffic is regulated within US and between US and Canada through State fish health regulations.

No new measures reported by the other Parties or the other EU Member States.

1.2.2 Management of aquaculture units to prevent escape of fish

Canada

Containment Codes are in place or are under development within provinces; they are under provincial jurisdiction. Newfoundland's Code of Containment and Implementation has been updated. Growers bear responsibility of net testing via third party and audits are performed regularly to verify. DFO - Newfoundland has implemented a new Recapture Plan to respond to escapes. Requirements for mooring systems currently under review. Industry in New Brunswick has developed a draft code of Containment.

European Union

UK (Scotland)

Statutory Instrument 2002 No. 193 "The Registration of Fish Farming and Shellfish Farming Business Amendment (Scotland) Order 2002" came into force on 10 May 2002. This Order requires notification of escapes or significant risk of escapes, measures taken to recover the fish and numbers recovered.

USA

All marine and freshwater facilities have developed containment management plans based on a hazard analysis critical control point approach (HACCP). The first round of audits on these plans will be completed by the summer of 2003.

No new measures reported by the other Parties or the other EU Member States.

1.3 Transfers

1.3.1 Transfers conducted so as to minimise potential for disease/parasite transmission and for genetic and other biological interactions

No new measures reported by any Party.

1.3.2 Introduction of mechanisms to control transfers where necessary

No new measures reported by any Party.

2. Measures To Minimise Genetic And Other Biological Interactions

2.1 Design standards for aquaculture units

2.1.1 Establishment of standards and technical specifications for the design and deployment of aquaculture units (marine and freshwater)

European Union

Ireland

A policy document on containment has been developed and is undergoing consultations with the industry and Irish authorities.

USA

The containment management system plans mentioned above contain specifications for marine and freshwater facilities. These plans will be included as permit conditions for facilities and will be audited annually.

No new measures reported by the other Parties or the other EU Member States.

2.1.2 Optimisation of containment of fish through use of appropriate technology for prevailing conditions

European Union

Ireland

A policy document on containment has been developed and is undergoing consultations with the industry and Irish authorities.

UK (Northern Ireland)

Escape contingency plans in place.

No new measures reported by the other Parties or the other EU Member States.

2.1.3 Regular routine inspection and maintenance of aquaculture systems and upgrading of equipment as new technological improvements become available

Canada

In Newfoundland, new net-testing guidelines are in effect, reflecting more stringent minimum criteria as exist in British Columbia and Norway.

European Union

UK (Scotland)

Monitoring of compliance with the industry Code of Practice on Containment to be conducted.

USA

The containment management system requires annual audits of facilities. These audits are to be conducted by an independent third party. Escapes from facilities will also trigger additional audits.

No new measures reported by the other Parties or the other EU Member States.

2.1.4 Regular monitoring and use of efficient security systems

European Union

UK (Northern Ireland)

Escape contingency plans in place.

UK (Scotland)

Monitoring of compliance with the industry Code of Practice on Containment to be conducted.

USA

The containment management system plans include regular monitoring of facilities and inventory tracking procedures.

No new measures reported by the other Parties or the other EU Member States.

2.2 Salmon enhancement

2.2.1 Use of local stocks wherever possible

USA

Recovery efforts for populations of endangered Atlantic salmon include river-specific hatchery programs. In the past the aquaculture industry has assisted wild fish recovery by raising river-specific eggs to smolts and adults to be stocked back to their river of origin.

No new measures reported by the other Parties.

2.2.2 Implementation of criteria for broodstock selection and management

No new measures reported by any Party.

2.3 Salmon ranching

2.3.1 Use of local stocks or alternatively local ranching stocks

No new measures reported by any Party.

2.3.2 Harvesting of ranched fish at or close to release site or in fisheries managed in a way that prevents over-harvesting of wild stocks

No new measures reported by any Party.

2.4 Salmon farming

2.4.1 Use of local broodstocks where practicable

European Union

Ireland

Only one Irish hatchery currently producing commercial salmon ova. The remainder are imported from the UK and Iceland.

USA

Draft permit conditions for aquaculture facilities include a prohibition on the use of reproductively viable non-North American strain Atlantic salmon.

No new measures reported by the other Parties or the other EU Member States.

2.4.2 Efforts to recapture escaped farmed salmon

Canada

DFO-Newfoundland has developed a rapid response licensing and recapture policy as a new element under the Code of Containment for marine cage salmonid aquaculture. Salmonid aquaculturists are required to establish stock recapture plans, train staff in the use of recapture gear, report details/causes of escape incidents, initiate recapture efforts within 24 hours of incidents, and maintain logbooks of catches.

European Union

Ireland

No formal procedure but regional authorities respond on the basis of the specific circumstances.

UK (Scotland)

Statutory Instrument 2002 No. 193 "The Registration of Fish Farming and Shellfish Farming Business Amendment (Scotland) Order 2002" came into force on 10 May 2002. This Order requires notification of escapes or significant risk of escapes, measures taken to recover the fish and numbers recovered.

USA

Containment management plans include provisions for emergency response and recapture attempts. The specifics of these plans have yet to be developed and the state and federal resource agencies need to develop a policy on recapture that would guide issuance of permits.

No new measures reported by the other Parties or the other EU Member States.

2.4.3 Establishment of site-specific contingency plan in the event of large escapes

USA

Each facility-specific containment management plan includes a description of escape response actions.

No new measures reported by the other Parties.

3. Measures To Minimise Disease And Parasite Interactions

3.1 Control and prevention of diseases and parasites

3.1.1 Aquaculture production process conducted in accordance with appropriate fish health protection and veterinary controls, including the application of appropriate husbandry techniques to minimise risk of diseases

Russian Federation

A programme of veterinary and sanitary control of salmon sea farms has been developed. It includes: regular veterinary and sanitary inspection of farms, examination of reared fish for pathologies (4 times a year), water and feed quality control.

USA

The University of Maine and industry integrated pest management program for sea lice control lowered the treatment threshold from prior years, required physical examination of anesthetized fish, and coordinated treatments. In addition, all US sites were audited by USDA staff for compliance with biosecurity plans and protocols.

In response to ISA outbreaks in Cobscook Bay, a bay management program was previously adopted. Under this program, in 2002 new stocking protocols were implemented allowing only a portion of the Bay to be stocked. In 2003, stocking will be allowed in the other portions of the Bay. No cases of ISA were detected in Maine aquaculture facilities in 2002.

Maine DMR and USDA are working directly with New Brunswick provincial officials to bring the two countries' programs into conformance, which includes direct requests for New Brunswick's surveillance and eradication policies to be upgraded to match US standards.

No new measures reported by the other Parties.

3.1.2 Treatment or removal of diseased stock and measures to ensure diseased fish are not released to the wild

No new measures reported by any Party.

3.2 Stocking density

3.2.1 Aquaculture production adapted to the site's holding capacity and stocking density should not exceed levels based on good husbandry practices

European Union

UK (Northern Ireland)

In practice and controlled by organic status.

USA

Maine DMR is tracking stocking densities at all sites through transfer permit requests and monthly harvest reporting.

No new measures reported by the other Parties or the other EU Member States.

3.3 Removal of dead or dying fish

3.3.1 Removal of dead/dying fish and disposal along with waste materials in an approved manner

USA

The Maine biosecurity audit program and existing fish health rules contain provisions on the removal of dead and dying fish.

No new measures reported by the other Parties.

3.3.2 Establishment of procedures for effective removal and disposal of infectious material

USA

The Maine biosecurity audit program and existing fish health rules contain provisions on the removal of dead and dying fish.

No new measures reported by the other Parties.

3.3.3 Establishment of contingency plans for disposal of mortalities from emergency situations

USA

The Maine biosecurity audit program and existing fish health rules contain provisions on the removal of dead and dying fish.

No new measures reported by the other Parties.

3.4 Adequate separation

3.4.1 Separation of aquaculture facilities on the basis of a general assessment of local conditions

Canada

Newfoundland enforces a minimum 1 km between sites.

No new measures reported by the other Parties.

3.5 Year-class separation

3.5.1 Rearing of different generations in separate locations where possible

Canada

Newfoundland has enforced a single year class site policy for existing and new applicants. New Brunswick has moved towards single year class farming, as well as single year class Bay Management Areas.

USA

The permit issued by the Maine DMR stipulates the phase-out of multi year class stocking by 2004. In addition, the draft discharge permit requires single year class stocking.

No new measures reported by the other Parties.

3.6 Fallowing of sites

3.6.1 Use of a fallowing regime wherever possible

Canada

In progress. In New Brunswick, some sites have been fallowed as a tool in reducing the spread of ISA from one year class to another year class. Newfoundland has traditionally fallowed all sites for a minimum of 5 months, due to movement of sites to avoid ice. Year-round sites must fallow for a year after the production cycle is complete.

European Union

UK (Scotland)

In 2002 a National Development Officer for Area Management was appointed. Synchronous fallowing is an element of Area Management Agreements. The Tripartite Working Group (the Scottish Executive, Fish Farming Industry and Wild

Fish Interests) facilitated the development of two new Area Management Agreements, bringing the total to seven.

No new measures reported by the other Parties or the other EU Member States.

3.7 Use of medicines and disinfectants

3.7.1 Careful use of medicines and disinfectants in accordance with manufacturers' instructions, Codes of Practice and in compliance with regulatory authorities

No new measures reported by any Party.

3.8 Lists of diseases

3.8.1 Lists of prevailing infectious diseases and parasites and methods for control to be maintained by appropriate authorities

European Union

Sweden

Gyrodactylus salaris has been included on the list of notifiable diseases.

Russian Federation

Provisional veterinary and sanitary standards for sea cage farms have been developed, which include a list of infectious diseases and parasites and methods for control.

No new measures reported by the other Parties or the other EU Member States.

4. Research And Development

4.1 Research, small-scale testing and full-scale implementation of:

4.1.1 Wild salmon protection areas

European Union

UK (Northern Ireland)

Under the EU Habitat Directive it is proposed to designate rivers in the Foyle catchment as Special Areas of Conservation (SACs) for salmon.

No new measures reported by the other Parties or the other EU Member States.

4.1.2 Sterile salmon

European Union

Ireland

Publication of EU-funded research undertaken by University College, Galway, on ocean migration and recaptures of tagged triploid, mixed-sex and all-female Atlantic salmon (*Salmo salar)* released from rivers in Ireland.

No new measures reported by the other Parties or the other EU Member States.

4.1.3 Tagging and marking

European Union

Ireland

300,000 salmon smolts tagged and released in 2001/02 marking season.

UK (Northern Ireland)

Micro-tagging programme commenced on River Finn in 2002.

Iceland

Microtagging 10% of smolts in large cage rearing stations.

USA

Laboratory trials have been conducted on a number of tagging techniques and field trials are now ongoing with otolith marking and coded wire tags. Mandatory marking of aquaculture fish is included in a draft permit for all facilities.

No new measures reported by the other Parties or the other EU Member States.

4.1.4 *Designation of aquaculture regions*

No new measures reported by any Party.

4.1.5 *Alternative production methods (land-based, closed or contained floating facilities and other containment technologies)*

Norway

Research institute programme on the development of environmentally friendly technology (SINTEF).

No new measures reported by the other Parties.

4.1.6 *Use of local broodstocks*

No new measures reported by any Party.

4.1.7 *Understanding of genetic interactions*

European Union

UK (Northern Ireland)

A programme of genetic sampling has been introduced in the Foyle area.

No new measures reported by the other Parties or other EU Member States.

4.1.8 *Prevention and control of disease and parasites*

Norway

Increased focus on IPN. New parasite discovered on farmed salmon in Finnmark county.

USA

The US Department of Agriculture and National Marine Fisheries Service are continuing disease screening of wild fish. USDA is also conducting environmental surveillance on the spread of ISAv around infected sites including characteristics of how ISAv spreads and its viability outside of infected fish.

No new measures reported by the other Parties.

ANNEX 25

Council

CNL(03)37

Return by Denmark (in respect of the Faroe Islands)
Made Under the Oslo Resolution

CNL(03)37

Return by Denmark (in respect of the Faroe Islands) Made Under the Oslo Resolution

1. General Measures

1.1 Sites

1.1.1 Sites only to be assigned for aquaculture where hydrographical, epidemiological, biological and ecological standards can be met

Addressed by Faroes legislation.

1.2 Operations

1.2.1 Management of aquaculture units to prevent and control diseases and parasites

Faroese legislation in agreement with EU Directives and Decisions.

1.3 Transfers

1.3.1 Transfers conducted so as to minimise potential for disease/parasite transmission and for genetic and other biological interactions

Faroese legislation in agreement with EU Directives and Decisions.

2. Measures To Minimise Genetic And Other Biological Interactions

2.2 Salmon enhancement

2.2.1 Use of local stocks wherever possible

Import permitted when complying with Faroese legislation and with EU Directives and decisions. No import of salmonids during the last 15-20 years.

2.4 Salmon farming

2.4.1 Use of local broodstocks where practicable

Import permitted when complying with Faroese legislation and with EU Directives and decisions. No import of salmonids during the last 15-20 years.

3. Measures To Minimise Disease And Parasite Interactions

3.1 Control and prevention of diseases and parasites

3.1.1 Aquaculture production process conducted in accordance with appropriate fish health protection and veterinary controls, including the application of appropriate husbandry techniques to minimise risk of diseases

Faroes legislation in agreement with EU Directives and Decisions. Fresh and seawater salmon farms are inspected 12 and 6 times per year by a veterinarian, respectively.

3.1.2 Treatment or removal of diseased stock and measures to ensure diseased fish are not released to the wild

Faroes legislation in agreement with EU Directives and Decisions. Fresh and seawater salmon farms are inspected 12 and 6 times per year by a veterinarian, respectively.

3.3 Removal of dead or dying fish

3.3.1 Removal of dead/dying fish and disposal along with waste materials in an approved manner

Faroese legislation in agreement with EU Directives and Decisions.

3.3.3 Establishment of contingency plans for disposal of mortalities from emergency situations

Faroese legislation in agreement with EU Directives and Decisions.

3.7 Use of medicines and disinfectants

3.7.1 Careful use of medicines and disinfectants in accordance with manufacturers' instructions, Codes of Practice and in compliance with regulatory authorities

Faroese legislation in agreement with EU Directives and Decisions.

3.8 Lists of diseases

3.8.1 Lists of prevailing infectious diseases and parasites and methods for control to be maintained by appropriate authorities

ISA, BKD, IPN as described in the current edition of the OIE Diagnostic Manual for Aquatic Animal Diseases.

ANNEX 26

Council

CNL(03)23

Report of the Liaison Meeting with the Salmon Farming Industry

CNL(03)23

Report of the Liaison Meeting with the Salmon Farming Industry

1. Since 2000, the Liaison Group, comprising NASCO and the North Atlantic salmon farming industry, has met annually. The Council had previously welcomed this closer, more open and broader cooperation with the salmon farming industry and the commitment to work together on issues of mutual concern. The fourth meeting of the Liaison Group was held in Williamsburg, Virginia, USA on 13 March 2003 and the report of the meeting is attached.

2. At its third meeting the Liaison Group had agreed a format for reporting, on an annual basis, on progress in developing and implementing action plans on containment. The first returns according to this format were provided to the Liaison Group and are contained in Annex 4 of the report. The Group welcomed the progress made in developing and implementing Action Plans on containment and in transparent reporting of the actions taken, and agreed that it was important to continue to improve the reporting process so that detailed responses to the questions in the agreed format are available to the Group in advance of its meetings.

3. Last year, the Liaison Group's Salmon Cooperation Group initiated a project, with industry funding, to review existing cooperative ventures between wild and farmed salmon interests, to identify further areas for cooperation and to examine options for securing funding for cooperative projects. The report of this SALCOOP project was welcomed by the Liaison Group which agreed that initially it should focus on a small number of the eighteen recommendations. To facilitate this it is proposed that a Workshop be held in conjunction with the next Liaison Group meeting in 2004, focusing on area management initiatives, restoration programmes and the pros and cons of using sterile salmon in farming and the possible opportunities for cooperative trials. The Workshop would also allow for reports on progress in implementing the other SALCOOP recommendations.

4. A report on the SCPA's meeting on application of the Precautionary Approach to aquaculture, introductions and transfers and transgenics was made to the Liaison Group. The draft Resolution developed by the SCPA was made available to industry representatives who indicated that they welcomed the opportunity to review the document at an early stage and agreed to provide comments to NASCO following ISFA's next meeting and before NASCO's Twentieth Annual Meeting.

5. The Liaison Group also considered a request from NASCO's accredited NGOs to participate in future meetings of the Liaison Group in an observer capacity. NASCO had no problem in accepting this proposal in order to increase transparency of the Group's work. However, the industry representatives indicated that they believed that it was important to keep the Group small for its efficient functioning and indicated that they would not wish the problems that had occurred at NASCO's Nineteenth Annual Meeting in relation to communication with the media intruding into the work of the Liaison Group. The proposed Workshop to be held in 2004 would, however, be an open one. With regard to industry representation in the Group, it was noted that

the North Atlantic salmon farming industry was now fully represented but that, if companies not represented by ISFA members or the Russian industry representatives should seek to participate, each application would need to be considered on a case-by-case basis and such participation would require the agreement of both NASCO and industry members of the Group.

6. The Council is asked to:

- note the recommendations of the Salmon Cooperation Group and, in particular, decide if it can accept the proposal to hold a Workshop in conjunction with the next Liaison Group meeting in 2004;
- note the decision of the Liaison Group concerning NGO participation in its meetings and about industry representation in the Group;
- consider any comments from the industry on the recommendations of the SCPA on application of the Precautionary Approach to aquaculture, introductions and transfers and transgenics (the views from the industry and other stakeholders will be considered under agenda item 5.2(c)).

Secretary
Edinburgh
2 May, 2003

SLG(03)9

Report of the Meeting of the North Atlantic Salmon Farming Industry and NASCO Liaison Group

Williamsburg Lodge, Williamsburg, USA

13 March, 2003

1. Introduction

1.1 The Chairman of the Liaison Group, Mr James Ryan, opened the meeting and welcomed participants to Williamsburg. He referred to the common interest of ISFA and NASCO members, who are working with the same species. The salmon farming industry is as concerned with safeguarding the wild stocks as it is with ensuring a successful and sustainable salmon farming industry. He referred to the progress made through the Liaison Group and the excellent spirit of cooperation that has characterised its meetings. He noted that there would be important issues to consider during the meeting, including reports on the development and implementation of containment actions plans and a report of the SALCOOP project, which had identified areas for further cooperative ventures between wild and farmed salmon interests.

1.2 An opening statement was made by Dr Malcolm Windsor on behalf of NASCO (Annex 1).

1.3 A list of participants is contained in Annex 2.

2. Nomination of a Rapporteur

2.1 Dr Peter Hutchinson, Assistant Secretary of NASCO, was appointed as Rapporteur.

3. Adoption of the Agenda

3.1 The Liaison Group adopted its agenda, SLG(03)5 (Annex 3), having deleted item 4(c), "Norwegian Research Council's Scientific Research Programme for Salmon", from the Draft Agenda since this and other areas of cooperative research are addressed under item 6 of the agenda.

4. Matters Arising since the First Meeting of the Liaison Group

(a) *Industry representation in the Liaison Group*

4.1 At the Group's last meeting the industry representatives had proposed that ISFA, a federation of national salmon farming associations, should in future be the organization which would represent the industry within the Liaison Group. NASCO had asked for an indication of how a North Atlantic group within ISFA might be structured and for a copy of the ISFA Constitution to be provided. The Liaison Group's Constitution states that it comprises representatives of NASCO and the North Atlantic salmon farming industry. At its Nineteenth Annual Meeting the Council of

NASCO had agreed that representatives of ISFA and of the salmon farming industry in Russia be invited to participate in future Liaison Group meetings, and invitations to the meeting had been issued accordingly.

4.2 ISFA currently accounts for approximately 90% of production of farmed salmon in the North Atlantic region and, with participation from the Russian salmon farming industry (currently not a member of ISFA), the view was expressed that the North Atlantic salmon farming industry was fully represented in the Liaison Group. However, the Group recognised that in future there could be salmon farming companies not represented by ISFA members that might seek to participate in the Liaison Group. The Group agreed that if this should occur the applications would need to be considered on a case-by-case basis and any decision to invite such participation would require the approval of both NASCO and the industry members of the Group.

(b) *NAC Protocols on Introductions and Transfers*

4.3 At the Group's 2001 meeting, representatives of the salmon farming industry in North America had referred to the need to re-examine NASCO's North American Commission's Protocols on Introductions and Transfers in the light of the development by the Liaison Group of Guidelines on Containment of Farm Salmon. At its 2002 meeting, Canada had advised the Group that it had developed a new National Code on introductions and transfers and that consultations were on-going in Canada with stakeholders. The Group had been advised that, once this process was complete, there would be consultations with the US with regard to reviewing the NAC Protocols in the light of this new policy. The Liaison Group had agreed to keep this matter under review.

4.4 Canada updated the Group on the ongoing consultation process. The National Code had been agreed by all jurisdictions in Canada and, at the present time, there is unlikely to be support for major revisions to the NAC Protocols. However, it will be important to ensure consistency of the Protocols with the National Code and once the consultations in Canada are completed there will be consultations with the US on revisions to the Protocols, hopefully before the next Annual Meeting of NASCO.

5. Progress in Developing and Implementing Action Plans on Containment

5.1 At its 2001 meeting, the Liaison Group had adopted Guidelines on Containment of Farm Salmon. These had been agreed by the Council of NASCO at its Eighteenth Annual Meeting and the Council had stressed the need for the guidelines to be reviewed and updated on a regular basis to take account of new technology and better understanding of the impacts of escaped farm salmon on the wild salmon stocks. The Council had asked the Liaison Group to monitor the development and implementation of the Action Plans envisaged under the guidelines and advise of progress on an annual basis.

5.2 At the Liaison Group's 2002 meeting verbal reports had been made by the Parties on progress in developing and implementing Action Plans which indicated that each country with salmon farming had begun the process of implementing Action Plans by cooperation between industry and governments. The Liaison Group had recognized that each country would inevitably proceed at different speeds in implementing their Action Plans but had agreed that there was a need to develop a systematic process of reporting on implementation of the Action Plans. A format had been agreed for reporting on an annual basis. The first returns according to this format were presented to the Liaison Group, SLG(03)7 (Annex 4). Copies of action plans made available to the Liaison Group are contained in document SLG(03)8 (Annex 5).

5.3 The Group welcomed the progress made in developing and implementing Action Plans and towards comprehensive and transparent reporting of the actions taken in accordance with the guidelines. It was recognised that it would be a matter for each country to decide whether, in future, the responsibility for reporting should be with the industry or government representatives to the Group or a joint initiative. However, it was agreed that it was important to continue to improve the reporting process so that detailed responses to the five questions in the agreed format and copies of Action Plans (or details of changes to existing plans) are made available to the Group well in advance of its meetings.

6. Report of the Salmon Cooperation Group

6.1 At its 2001 meeting the Liaison Group had established a Salmon Cooperation Group to explore options for enhanced cooperation between wild and farmed salmon interests. Last year the Salmon Cooperation Group reported that ten areas for possible joint initiatives had been identified but initially the Group would work to review all existing cooperative ventures between wild and farmed salmon interests, to identify further areas for cooperation and to examine options for securing funding for cooperative projects. Funding for this initial review, the SALCOOP project, had been secured from industry sources. The report of the SALCOOP project, SLG(03)4, was presented. The Executive Summary of the report is contained in Annex 6. Copies of the full report are available from the NASCO Secretariat.

6.2 The Liaison Group welcomed this report, commended the Salmon Cooperation Group and Margaret Poole for their work and agreed that it should be referred, with the support of the Liaison Group, to ISFA and NASCO for their consideration and possible endorsement. The report contains eighteen recommendations and the Group recognised that it was important that these be widely disseminated to interested parties and that a short-list of priority recommendations be identified so that further progress can be made. There was support for a Workshop at which further consideration could be given to the report's recommendations and on progress in implementing them. It was agreed that the SALCOOP project report should be made available on the NASCO and ISFA websites and drawn to the attention of other organizations with sites of relevance to cooperation between wild and farmed salmon interests, e.g. Aquaflow, AquaTT. The Irish Department of the Marine's Communication Section might also be asked to assist with publicizing the report. After the report has been considered by the Council of NASCO, consideration could be given to its publication and circulation.

6.3 The Liaison Group agreed that it should initially focus on a small number of the Group's recommendations and that it could best take the project's recommendations forward by holding a one- or two-day Workshop comprising a number of cooperative themes with the initial focus on:

- area management initiatives;
- restoration programmes;
- the pros and cons of using sterile salmon in farming and possible opportunities for cooperative trials.

6.4 Such a Workshop would also allow reports to be made on progress in implementing the SALCOOP proposals and on communication and education programmes. This Workshop would be open to the public. It was agreed that an Organizing Committee should be established, comprising two representatives from NASCO and two from the North Atlantic salmon farming industry, to develop arrangements for the meeting, including appropriate publicity material, and to examine funding opportunities. It was proposed that the Workshop be held in conjunction with the ISFA meeting in 2004. It was further agreed that an item should be retained on the Liaison Group's agenda to allow for continuing reports on cooperative ventures between wild and farmed salmon interests.

6.5 While there was wide support for the need for enhanced cooperation between wild and farmed salmon interests, the meeting was advised, however, of a case where a cooperative agreement entered into on a voluntary basis had become mandatory, and that this could cause problems.

7. Application of the Precautionary Approach to Salmon Management

7.1 Under the Liaison Group's Guiding Principles for Cooperation, the Parties agreed to work cooperatively when consideration is given to application of the Precautionary Approach to salmon aquaculture. Therefore a brief verbal report was presented of the meeting of NASCO's Standing Committee on the Precautionary Approach (SCPA) to consider application of the Precautionary Approach to aquaculture, introductions and transfers and transgenics. This meeting had been held immediately prior to the Liaison Group meeting and a draft Resolution, which had been developed by the SCPA, was made available to the industry representatives, although it had not, at this stage, been presented to the Council of NASCO. The Resolution is a consolidation of all NASCO's agreements concerning aquaculture, introductions and transfers and transgenics. It is based closely on the wording in the existing agreements but includes new sections on implementation, placement of the burden of proof, risk assessment, mitigation and corrective measures, and standardised definitions. Furthermore, in order to broaden the base and ensure balance in addressing all impacts of aquaculture, guidelines on stocking had been developed. The Liaison Group's Guidelines on Containment had not been changed.

7.2 NASCO representatives indicated that they would appreciate feedback from the salmon farming industry on the SCPA's recommendations which will be considered by the Council at its Twentieth Annual Meeting. The Council had previously recognized that because the SCPA's work covered issues wider than salmon farming, i.e. introductions and transfers, stocking and transgenics, the Parties would need to undertake consultations on these issues with relevant stakeholders. The industry representatives confirmed that they welcomed the opportunity to review the document at an early stage and agreed to respond with comments following the next meeting of ISFA, and before NASCO's Twentieth Annual Meeting. The view was expressed that the Liaison Group's Guiding Principles for Cooperation should have been included in the draft Resolution. However, NASCO indicated that only the documents concerning measures to minimise impacts from aquaculture, introductions and transfers and transgenics had been included. Thus, the Liaison Group's Guidelines on Containment of Farm Salmon had been included but as the Guiding Principles deal only with the basis for working arrangements between NASCO and the salmon farming industry, they had not been included.

8. Reports on the Status of Wild Salmon Stocks

8.1 NASCO advised the Group that the report of the ICES Advisory Committee on Fishery Management on the status of stocks in 2002 will not be available until early May. However, at this time it will be made available to salmon farming industry representatives. A brief summary of the advice for the previous year was presented, which highlighted the continuing low returns, linked to low marine survival, of both European and North American Atlantic salmon stocks. Preliminary information suggests that there had not been any major improvement in stock status in 2002 and, in some areas, there had been further declines. However, reference was made to some signs of improved returns to some rivers on the west coast of Scotland where many populations are in a critical condition.

8.2 The Group discussed the significance of by-catch of salmon post-smolts in fisheries for pelagic fish species in the North-East Atlantic. There is particular concern about by-catch of post-smolts in the pelagic trawl fishery for mackerel. Preliminary estimates made by ICES suggested that between 600,000 – 950,000 post-smolts may be taken in this fishery but these estimates will be further refined by ICES in the light of the results of additional research trawling by Norwegian scientists and research trawls and an observer programme carried out by Russia in 2002. Despite the very high estimate of by-catch, preliminary analysis did not appear to indicate that it was a major cause of decline in abundance of Scottish spring salmon stocks. Furthermore, there is not thought to be a large by-catch problem in North America yet stocks there have also declined. All available data will be examined by ICES in developing its advice to NASCO for presentation at the June 2003 meeting. It may be that by lowering the depth of the headrope of the pelagic trawls below 5m the by-catch of salmon could be avoided, but the implications of this measure for the mackerel fishery would need careful consideration. Iceland reported that salmon of 1½ - 2kg weight had been caught as a by-catch by Icelandic trawlers operating close to Svalbard and that the available information would be provided to ICES. There is, therefore, a potential problem of by-catch of both post-smolts and salmon that have spent one or more winters at sea.

9. NGO Participation in the Liaison Group

9.1 At its 2001 meeting the Liaison Group agreed that it would be important to demonstrate significant progress in its work before considering changes to its Constitution so as to allow participation by NGOs in its meetings. The Liaison Group had indicated to NASCO's accredited NGOs that it looked forward to being in a position to return to this issue at a future meeting.

9.2 Prior to the Liaison Group's 2003 meeting, the Chairman of NASCO's NGOs, Mr Chris Poupard, had written to the Chairman of ISFA, Dr Vigfus Johannsson, requesting that he or his nominee from the accredited NGOs be invited to participate in an observer capacity in future meetings of the Group. NASCO indicated that it would have no problems in accepting this request in order to increase the transparency of the Group's meetings. Furthermore, NASCO pointed out that the NGOs are now better organised and able to provide coordinated responses to issues concerning salmon conservation and management. Some NGOs are cooperating with the salmon farming industry in programmes to safeguard and restore wild stocks. The industry representatives indicated that, in their view, the Group's meetings were already transparent, since its reports are made available to the NGOs. While there is increasing cooperation between the salmon farming industry and NGOs in a number of countries, the industry representatives highlighted the need to keep the Liaison Group small for its efficient functioning. The industry representatives also referred to the problems involving two of NASCO's accredited NGOs that had occurred at NASCO's last Annual Meeting in relation to communication with the media. They would not want to see such actions intruding into the work of the Liaison Group. The industry representatives, therefore, felt that NGOs should not be admitted to the Group for the time being, although the Workshop to be held in 2004 would be an open one.

10. Any Other Business

10.1 There was no other business.

11. Date and Place of Next Meeting

11.1 The Liaison Group agreed that its next meeting and the Workshop referred to under agenda item 6 should be held in about one year's time so as to maintain the impetus of the Group's work. The Group agreed to leave open the date and place of the next meeting until after ISFA's meeting in May.

12. Report of the Liaison Group Meeting

12.1 The Liaison Group agreed a report of its meeting by correspondence.

Opening Statement on Behalf of the North Atlantic Salmon Conservation Organization (NASCO)

First, on behalf of the NASCO delegates to this Liaison Group Meeting, I would like to thank our US colleagues in the National Marine Fisheries Service for the arrangements made for this meeting. It is a great pleasure to be here in beautiful and historic Williamsburg, and we are looking forward to building on the spirit of cooperation that has developed through these meetings and to making progress on issues of mutual concern. I would particularly like to welcome our colleagues from the salmon farming industry in Russia who are participating for the first time in this Liaison Group.

The Council of NASCO has welcomed the development of Guidelines on Containment of Farm Salmon and has asked that the Liaison Group monitor the development and implementation of the action plans developed in accordance with these guidelines and advise on progress on an annual basis. Last year, this group developed a reporting format, and we look forward to receiving the first returns under this new systematic reporting process.

Our second task will be to receive a report back from our Salmon Cooperation Group. You will recall that last year we asked that the Group review all existing cooperative ventures between wild and farmed salmon interests. Funding for the review had been made available from industry sources, and we have the group's recommendations to review. We see this as contributing to a confidence-building process.

Thirdly, NASCO's Standing Committee on the Precautionary Approach met earlier this week to consider application of the Precautionary Approach to aquaculture, introductions and transfers and transgenics. Under this Liaison Group's guiding principles, we agree to work cooperatively when consideration is given to application of the Precautionary Approach to salmon aquaculture and the Council of NASCO is interested to have feedback from the industry and other stakeholders on the Committee's proposals. We will be making a report on the Committee's work which has culminated in the development of a new Resolution; this might become known as the 'Williamsburg Resolution' and it incorporates all of NASCO's agreements on aquaculture, introductions and transfers and transgenics.

Finally, NASCO's NGOs have again raised the question of obtaining observer status for one nominated representative to future meetings of this Liaison Group. You will recall that the Liaison Group felt that it was important to demonstrate significant progress before allowing wider participation in its meeting but looked forward to being able to return to this issue. We will need to fully consider this issue of transparency here in Williamsburg.

We in NASCO look forward to working with the industry on these and other issues on our agenda today, and we are confident that we can make further progress in a continuing spirit of goodwill and cooperation.

North Atlantic Salmon Farming Industry and NASCO Liaison Group

Williamsburg Lodge, Williamsburg, USA
13 - 14 March 2003

List of Participants

Ms Jessica Anthony	National Marine Fisheries Service, Gloucester, Massachusetts, USA e-mail: jessica.anthony@noaa.gov
Mr Edward Baum	Atlantic Salmon Unlimited, Hermon, Maine, USA e-mail: atlantic_salmon_unlimited@adelphia.net
Mr Sebastian Belle	Maine Aquaculture Association, Maine, USA e-mail: futureseas@aol.com
Ms Carmen Beraldi	Secretaria General Pesca Maritima, Madrid, Spain e-mail: cberaldi@mapya.es
Dr Malcolm Beveridge	Freshwater Fisheries Laboratory, Perthshire, UK e-mail: beveridgem@marlab.ac.uk
Ms Kimberly Blankenbeker	National Marine Fisheries Service, Silver Spring, Maryland, USA e-mail: Kimberly.Blankenbeker@noaa.gov
Ms Nikki Brajevich	US Department of State, Washington DC, USA e-mail: BrajevichNM@state.gov
Ms Mary Colligan	National Marine Fisheries Service, Gloucester, Massachusetts, USA e-mail: mary.a.colligan@noaa.gov
Mr Richard Cowan	Department of the Environment, Fisheries and Rural Affairs London, UK e-mail: richard.cowan-official@defra.gsi.gov.uk
Mr David Dunkley	Scottish Executive Rural Affairs Department, Edinburgh, UK e-mail: david.dunkley@scotland.gsi.gov.uk
Ms Darlene Elie	Department of Fisheries and Oceans, Ottawa, Ontario, Canada e-mail: elied@dfo-mpo.gc.ca

Mr Arne Geirulv	Gigante Pechenga, Murmansk, Russia e-mail: geirulv@online.no
Ms Nell Halse	New Brunswick Salmon Growers' Association, New Brunswick, Canada e-mail: nbsganh@nb.aibn.com
Mr Knut Hjelt	FHL Aquaculture, Trondheim, Norway e-mail: knuta.hjelt@nho.no
Dr Peter Hutchinson	NASCO Secretariat, Edinburgh, UK e-mail: hq@nasco.int
Mr Arni Isaksson	Directorate of Freshwater Fisheries, Reykjavik Iceland e-mail: arni@veidimalastjori.is
Ms Svetlana Krylova	Murmanrybvod, Murmansk, Russia e-mail: mrv_sova@an.ru
Ms Violetta Kugiy	Gigante Pechenga, Murmansk, Russia e-mail: geirulv@online.no
Mr Andrey Lashkov	Gigante Pechenga, Murmansk, Russia e-mail: geirulv@online.no
Lord James Lindsay	Scottish Quality Salmon, Perth, UK e-mail: jlindsay@scottishsalmon.co.uk
Mr Paul Lyon	Department of Fisheries and Oceans, Ottawa, Ontario, Canada e-mail: lyonp@dfo-mpo.gc.ca
Mr John Moores	Department of Fisheries and Oceans, Ottawa, Ontario, Canada e-mail: mooresj@dfo-mpo.gc.ca
Mr Pentti Munne	Ministry of Agriculture and Forestry, Helsinki, Finland e-mail: pentti.munne@mmm.fi
Ms Margaret Poole	Salmon Cooperation Researcher, Ireland e-mail: salcoop@marine.ie
Dr Boris F Prischepa	Murmanrybvod, Murmansk, Russia e-mail: mrv@an.ru
Mr James Ryan (Chairman)	Ireland e-mail: jryan@anu.ie

Ms Elena Samoylova	PINRO, Murmansk, Russia e-mail: elena@pinro.ru
Mr Pasquale J Scida	National Marine Fisheries Service, Gloucester, Massachusetts, USA e-mail: Pasquale.Scida@noaa.gov
Mr Andrew Thomson	European Commission, Brussels, Belgium e-mail: Andrew.Thomson@cec.eu.int
Mr Øyvind Walsø	Directorate for Nature Management, Trondheim, Norway e-mail: oyvind.walso@dirnat.no
Dr Ken Whelan	The Marine Institute, Newport, Co. Mayo, Ireland e-mail: kwhelan@marine.ie
Dr Malcolm Windsor	NASCO Secretariat, Edinburgh, UK e-mail: hq@nasco.int
Dr Alexander Zubchenko	PINRO, Murmansk, Russia e-mail: salmon@pinro.ru

Annex 3 of SLG(03)9

SLG(03)5

A G E N D A

1. Introduction
2. Nomination of a Rapporteur
3. Adoption of the Agenda
4. Matters Arising since the Last Meeting of the Liaison Group
   (a) Industry representation in the Liaison Group
   (b) NAC Protocols on Introductions and Transfers
5. Progress in Developing and Implementing Action Plans on Containment
6. Report of the Salmon Cooperation Group
7. Application of the Precautionary Approach to Salmon Management
8. Reports on the Status of Wild Salmon Stocks
9. NGO Participation in the Liaison Group
10. Any Other Business
11. Date and Place of Next Meeting
12. Report of the Meeting

SLG(03)7

Reports on the Development and Implementation of Containment Action Plans

1.	Is there currently an Action Plan for containment of farm salmon so as to achieve a level of escapes that is as close to zero as practicable? If yes, please attach a copy. If no, what is the anticipated timetable for development of an Action Plan?

Canada

Background

Regulation of aquaculture in Canada is a shared responsibility between the federal government and the provincial or territorial governments. The Canadian Council of Fisheries and Aquaculture Ministers support, and are helping to facilitate, the development of a National Code for Sustainable Aquaculture (including containment). In Canada, Codes of Conduct, Codes of Practice and Best Management Practices are, by nature, voluntary. They are comprehensive, covering all aspects of aquaculture operations including escape prevention/containment. The development of these codes is being led by the Canadian aquaculture industry. The provinces, having the lead on siting, are collaborating with industry to ensure codes are in agreement with provincial legislation and are considering mandatory codes as a condition of licensing. The federal government is collaborating with industry to ensure codes are in agreement with federal legislation. A National Code System for Sustainable Aquaculture, under which a containment code would reside, will be based on specific standards and will be audited. The draft Code is nearing completion. The following Codes of Practice apply throughout the NASCO area within Canada. Where applicable, they are consistent with the SLG's recommendation on Codes of Containment:

- Best Management Practices for Sustainable Aquaculture in Freshwater (Quebec)

- Environmental Management Guidelines (a Code of Practice is in development) - Aquaculture Association of Nova Scotia

- Code of Containment for Use of Non-Local Salmonids Strains in Sea Cage Aquaculture in Bay d'Espoir and Marine Cage Culture Code of Practice for the Newfoundland Salmonid Aquaculture Industry

- Bay Management Agreement, Fish Health Surveillance Program, Environmental Management Guidelines (New Brunswick)

New Brunswick[1]

A Draft Code of Containment for Salmon Farming in New Brunswick was presented by the New Brunswick Salmon Growers Association to the Province of New Brunswick and has

[1] Among Canada's provinces in NASCO, New Brunswick accounts for 90% of the farmed salmon, Nova Scotia 7% and Newfoundland and Labrador the remaining 3% (2001).

been returned with further comment to the industry. The industry is drafting a comprehensive Code of Practice document that is consistent with the requirements of both provincial and federal regulators and meets the requirements of the Canadian Environmental Assessment Act (CEAA). The Code of Practice will compile various programs and agreements that are already being implemented, such as the Environmental Management Guidelines (regulated by the New Brunswick Department of Environment and Local Government), the Fish Health Surveillance Program (regulated by the New Brunswick Department of Agriculture, Fisheries and Aquaculture under the Fish Health Policy, which is in its final draft form) as well as Disinfection Guidelines, Harvesting Codes of Practice, Waste Management Plans and a Code of Containment. A draft Code of Practice will be brought to the membership of the New Brunswick Salmon Growers Association in the spring of 2003 for discussion. Once the Code has been ratified and printed, a copy will be made available to the Liaison Group.

European Union

Ireland

A copy of the Irish Salmon Growers Association (ISGA) containment plan is contained in Annex 5. This document is currently under discussion with the Department of Communications, Marine and Natural Resources, with a view to agreeing a national policy on escapes.

UK - Scotland

The Action Plan being implemented by the Scottish Executive involves both voluntary Codes of Practice and regulation. The plan:

- requires a site-specific containment specification and escapes contingency plan for all (marine) development consent applications within the Environmental Statement which arises from their Environmental Impact Assessment;
- should take account of the various outcomes from consultations with local wild fishery interests including the local Salmon Fishery Board (a process that is facilitated by the Tripartite Working Group Initiative);
- requires monitoring and reporting on industry compliance with its containment Code of Practice (details are published on the Scottish Quality Salmon (SQS) website) that SQS has developed and now implements as an integral component of its requirement for ISO 14001 accredited Environmental Management System (EMS);
- includes statutory escapes notification regulations;
- requires investigation and report of escape incidents;
- requires collection of containment data, and sponsored R&D.

Iceland

A regulatory measure regarding design and strength of equipment and internal inspection at cage farms is now going through a consultation process in Iceland. It should be issued as a regulatory measure before the end of 2003. An English translation will be made available when the measure has been issued.

Norway

A "National Action Plan to prevent escapees" has been developed. A working group under the leadership of the Norwegian Fishfarmers Association (now FHL Aquaculture) delivered a proposal for an Action Plan in March 2000. Apart from NFF, the working group consisted of representatives from the Directorate of Fisheries, the Directorate of Nature, the insurance companies and the environmental official with responsibility on a regional basis. The action plan has been strongly supported by the relevant departments, the insurance business and the association. Since then the "National Action Plan to prevent escapees" has been the basis for work in this field. Through the Action Plan the working group mapped the level and causes of escapes, conducted a thorough evaluation of the situation including technology, knowledge and economy; and proposed list of measures to prevent escapes.

The Action Plan is not available in English, but is available in Norwegian at http://www.fiskeoppdrett.no/informasjon.php?action=2&ID=14.

Due to the number of escapees last year, there is an agreement that action to prevent escapes has to be even more focused. Therefore the board of FHL Aquaculture has decided to go further. An addition to the action plan is therefore decided. This means special focus on relevant topics, who is responsible for following up, and if possible, time limits or deadlines for action.

Russia

A plan was approved for use on a regional basis in the Murmansk region in 2001. A translation is contained in Annex 5.

USA

No report received.

2.	Is information available on the level and causes of escapes? If yes, please provide details.

Canada

There is currently no formal mechanism for reporting escapes in New Brunswick, but the Code of Containment has been drafted to meet the Liaison Group's International Guidelines on Containment so will include such a mechanism. While there is currently no formal mechanism for reporting, there is substantial anecdotal evidence that indicates a dramatic drop in the incidence of escapes from salmon farms in spite of recent increases in production.

European Union

Ireland

Company	Date	Report	No. of Fish	Comments
SW Regional Fisheries Board (freshwater)	6/8 April 2002	11 April 2002	1,000+ (rainbow trout)	Cormorant damage to nets
Seastream Ltd	6 August, 2002	6 August, 2002	100+ (rainbow trout)	Loss during net change at sea

UK - Scotland

Statutory escapes notification regulations came into effect on 10 May 2002 by way of the Registration of Fish Farming and Shellfish Farming Businesses Amendment (Scotland) Order 2002. The following data are derived from notifications made on or after this date.

No of escape incidents notified: 1. Total 2. Salmon 3. Rainbow trout 4. Other	 10 8 2 0
Estimated stock losses: 1. Total 2. Salmon 3. Rainbow trout 4. Other	(No. of Fish) 373,655 298,655 75,000 0
No of incidents due to: 1. Storms 2. Predation Operator error/accident Other	 4 2 3 1
Number of recovery attempts: No. of fish recovered	5 2

A more detailed report and analysis will be published in due course.

Iceland

No escapes have been reported from Icelandic sea-cages but 6 fish of reared origin, 4 rainbow trout and 2 salmon, were caught in small trout streams, mostly in south-eastern Iceland. Since no escapees have been reported on the east coast in the vicinity of the Icelandic cage farms it seems likely that these fish might be of foreign origin.

Norway

The figures in Attachment 1 show:

i. Escapees 1992-1998 and production;
ii. Escapees and causes 1994-1999 in percentage of fish escaped;
iii. Preliminary figures on numbers and causes for 2002 and geographical distribution;
iv. Escaped salmon and rainbow trout in parts per thousands (‰) of farmed population;
v. Number of escapees of salmon and trout 1993-2002.

Russia

To date there have been no escapes.

USA

No report received.

3.	Is information available on implementation of and compliance with the Action Plan? If yes, please provide details.

Canada

The Draft Code of Practice will include information on compliance.

European Union

Ireland

Engineers from the Department of Communications, Marine and Natural Resources, regularly inspect structures. Some 100,000 wild salmon are examined annually for the presence of nose tags. All escapes encountered are recorded. The level of fish farm escapes encountered is consistently below 1% of samples.

UK - Scotland

Implementation of the Action Plan is underway, with preparations to monitor industry compliance started, and escape follow-up investigations routinely undertaken on notification, now statutory. The data collected as a result will inform both future R&D and compliance with the Action Plan. SQS will collate information from members in respect of containment measures and management under their EMS.

Iceland

Since the regulatory measure has not been finalised, there can be no question of compliance. The cage farms are nevertheless under inspection for compliance with other regulations and licences.

Norway

A short description of the follow-up in relation to the action plan is shown in Table 1 of Attachment 1.

Russia

All affected sites follow the plan.

USA

No report received.

4.	Is information available on the effectiveness of the Action Plan in minimizing escapes? If yes, please provide details.

Canada

The Code as drafted will include a mechanism for evaluating its effectiveness.

European Union

Ireland

See 3 above.

UK - Scotland

Few useful data are yet available, given that the legislative requirement is not yet one year old. However, the data collected will, over time, allow verification of the Action Plan's effectiveness, and enable future refinements to the Plan.

Iceland

Not applicable.

Norway

Minimizing escapes is a continuous process. There seems to be a decline in escapees when compared to the total farmed population. The number of escapees is still far too high, and the numbers for 2002 increased compared to previous years.

Russia

It is difficult to evaluate the effectiveness of the Plan due to the fact that, so far, there have been no escapes.

USA

No report received.

5.	Have areas for research and development in support of the Action Plan been identified? If yes, please provide details.

Canada

The New Brunswick industry spent $24 million on capital investment in 2001 and continues to invest each year in innovation and new technology. Major restructuring has occurred in the past five years as the industry has moved to adopt new technologies and maximize on new scientific knowledge in the areas of hydrographics, cage and equipment design, environmental management and fish health issues. The New Brunswick Salmon Growers Association has identified research into engineering and hydrodynamics as a major priority for the industry.

European Union

Ireland

No state-funded programmes are in place but the industry keeps abreast of new technology in this area. Recently industry has invested heavily in the testing and development of offshore cage technology.

UK - Scotland

Executive-sponsored R&D includes:
- modeling the potential genetic impact of escaped fish on wild populations;
- disease interactions between wild and farmed fish;
- impacts of salmon farming on wild populations;
- assessment of the impacts on native salmonid fishes of introduced rainbow trout;
- genetic inventory and management for west coast salmonid stock restoration.

Iceland

No areas of research and development have been identified. Due to the small size of the Icelandic farming industry it seems likely that Iceland will rely to some extent on information from other countries engaged in fish farming.

Norway

The Norwegian Fisheries and Aquaculture Industries Research Fund supports projects in this field. Two major projects are briefly described below:

- "New technology in net pens"
  Part objectives for the project are:
  1. Develop new technology for net pens – focusing on maintaining volume and geometry of nets;
  2. Mooring technology to cope with differences in topography;
  3. Management and new technology.

  Total economic input 2002-2004: NOK 5.5 million (approximately £500,000)

- “Preventive measures to reduce escapees”
  Part objectives for the project are:
  1. Based on experience and causes a technical standard for nets will be worked out;
  2. Quality testing and procedures for testing of nets;
  3. Manual for testing, using and treatment of nets.

  Total economical input 2003-2004: NOK 1.2 million (approximately £100,000)

Together with other projects dealing with preventing escapees, the research fund will contribute NOK 10 million (approximately £900,000) during the years 2002 (NOK 3 million), 2003 (NOK 4 million) and 2004 (NOK 3 million).

An Environmental Management System manual has been drawn up and made available for members. This can be obtained from:
http://www.fiskerifond.no/files/news/attach/guide_170103.pdf.

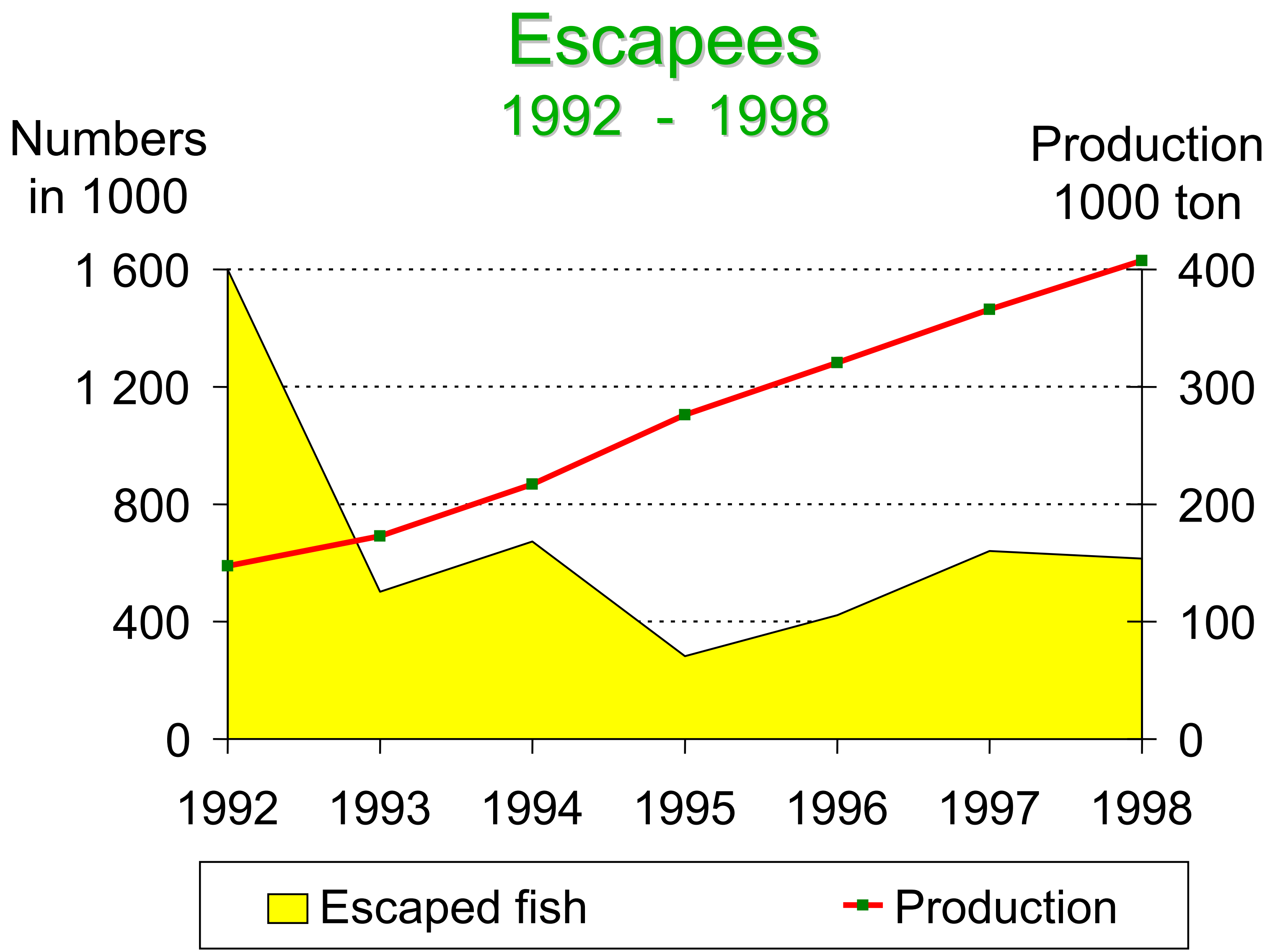
Russia

There have not been any areas for research identified. The extent of salmon farming is presently very limited in Russia.

USA

No report received.

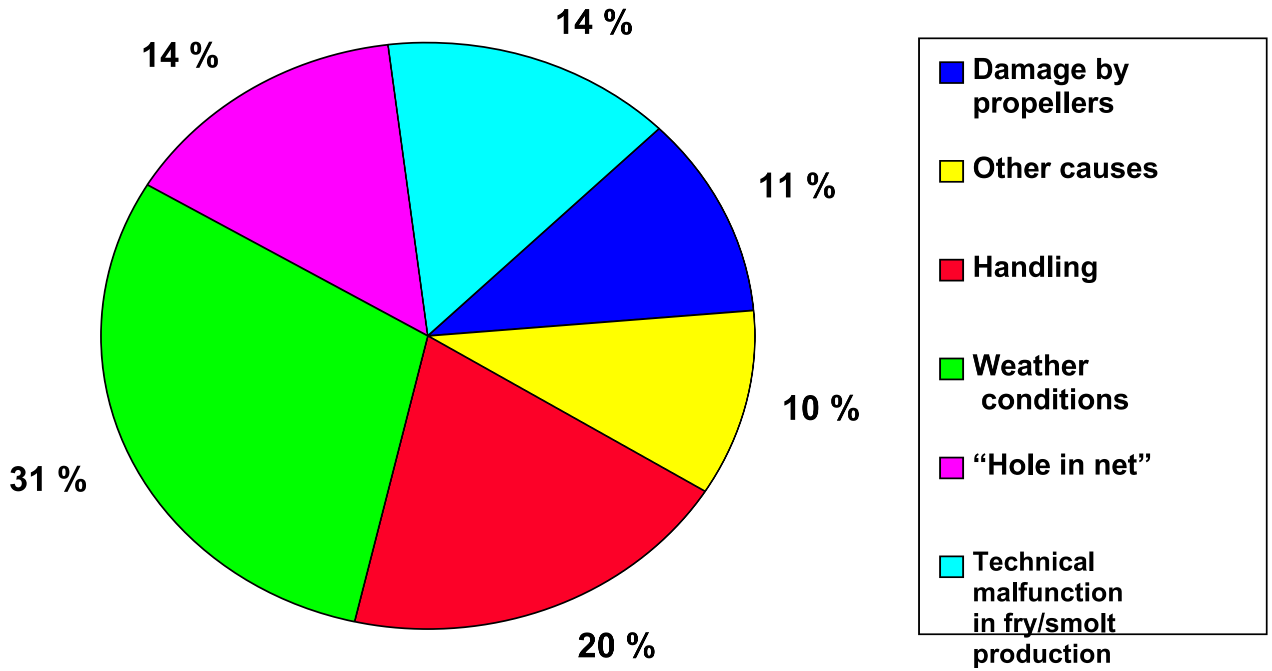
Information on Escapes and Causes of Escapes provided by Norway



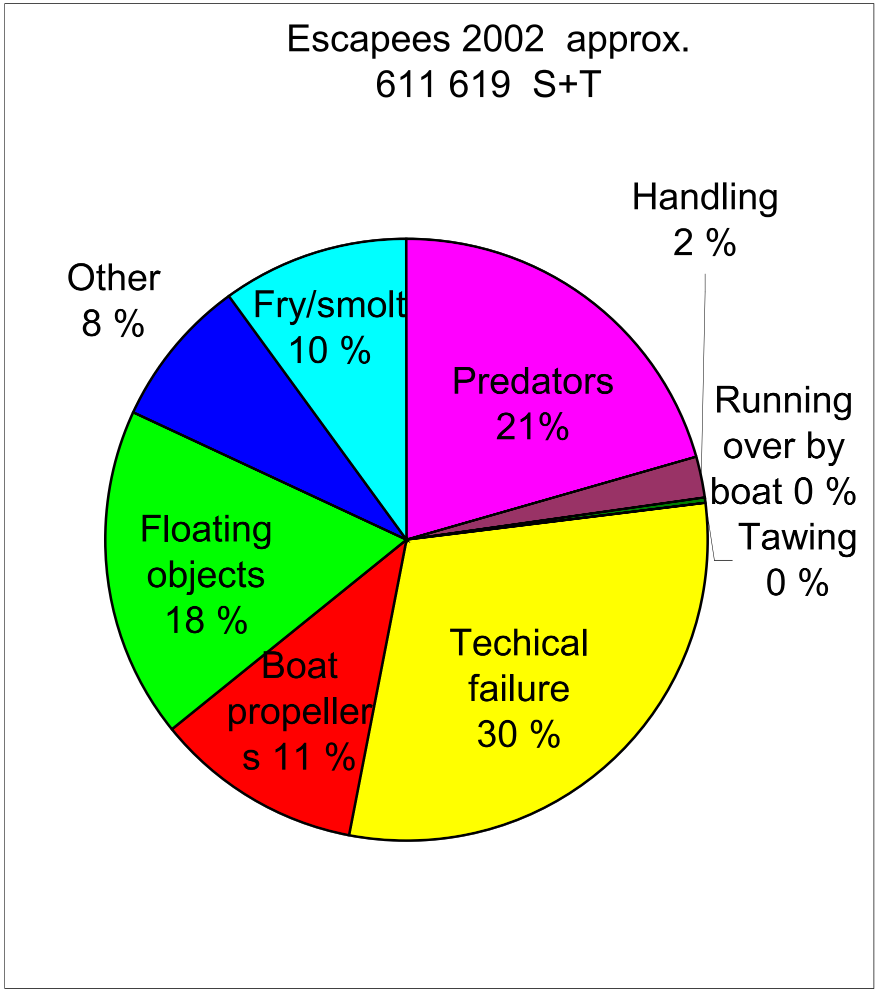
Source: Directory of Fisheries

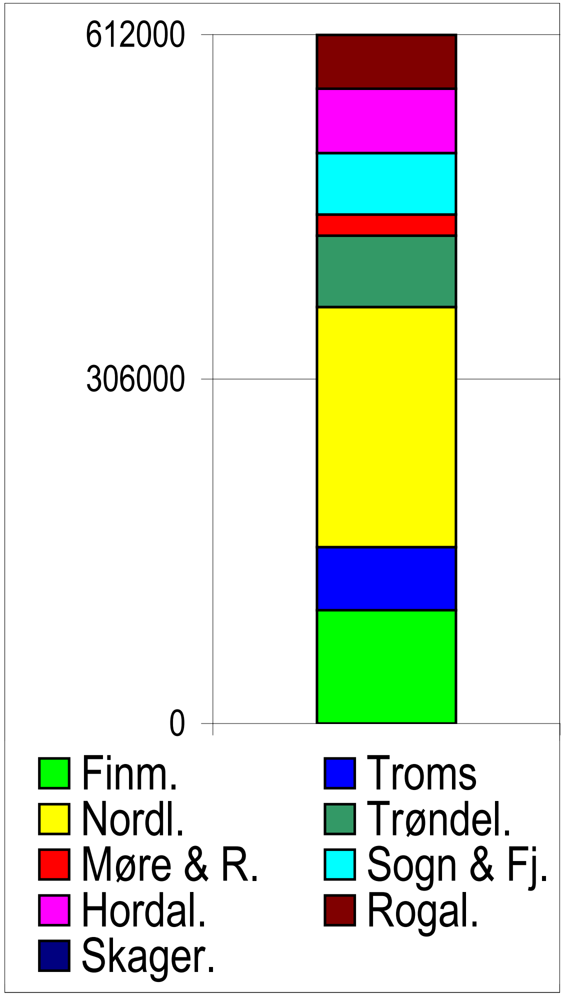
Escapees and causes 1994 – 99

Based on number of escaped fish



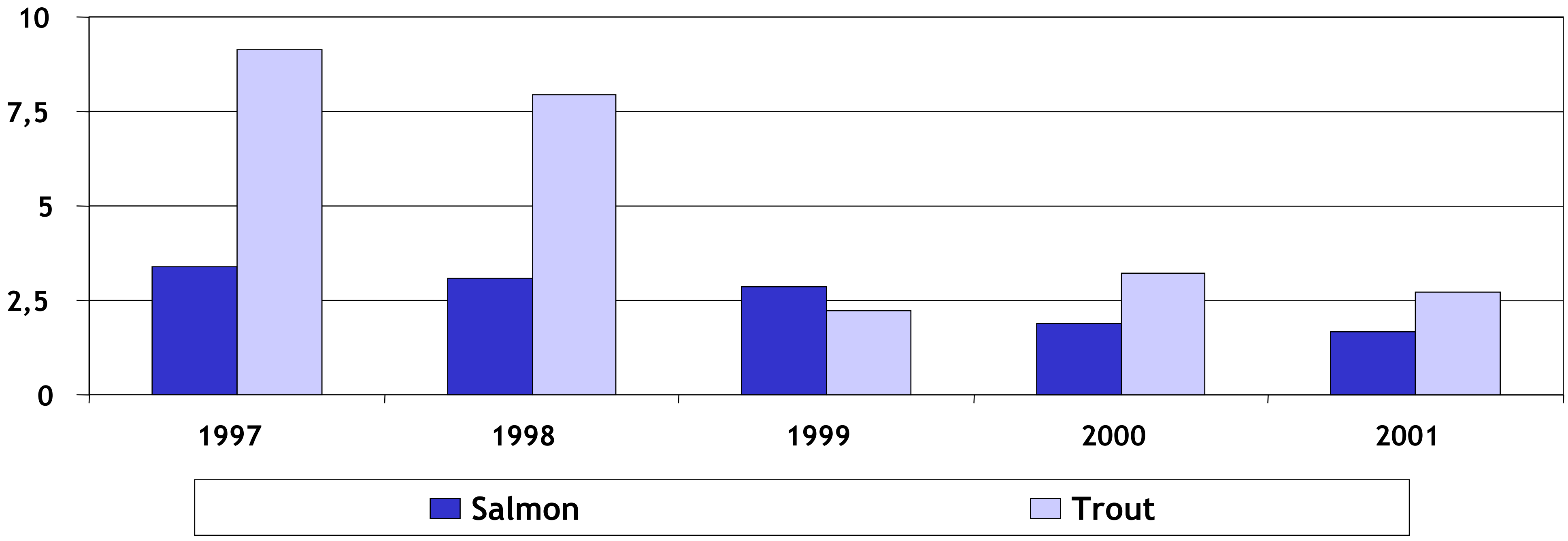
Kilde: Fiskeridirektoratet

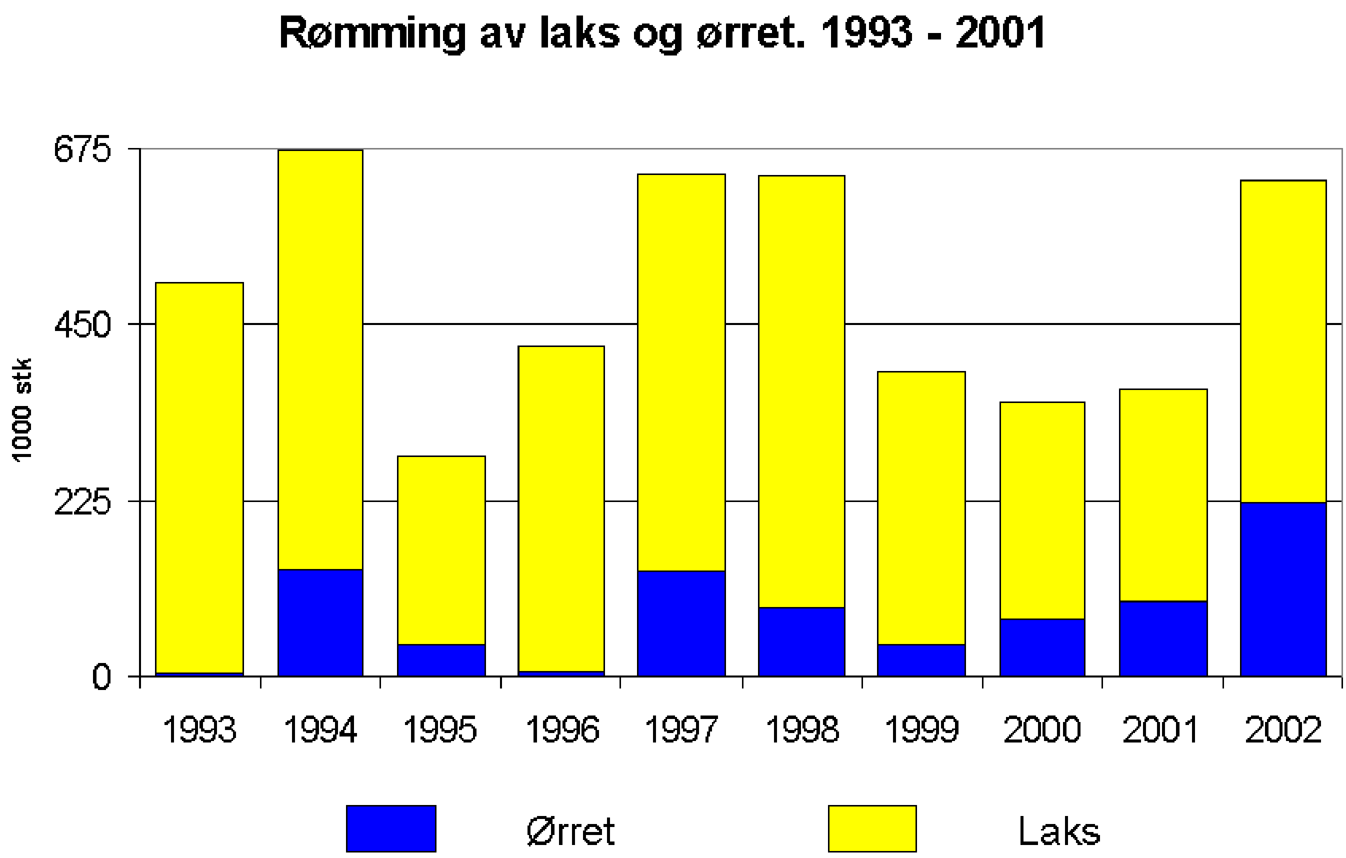

Escapees 2002 approx.
611 619 S+T
Handling
2 %
Other
8 %
Fry/smolt
10 %
Predators
21%
Running
over by
boat 0 %
Tawing
0 %
Floating
objects
18 %
Boat
propeller
s 11 %
Techical
failure
30 %


612000
306000
0
Finm.
Troms
Nordl.
Trøndel.
Møre & R.
Sogn & Fj.
Hordal.
Rogal.
Skager.

Escapees salmon and trout

Norway1997-2001
In ‰ of farmed population





Escapees, salmon and trout 1993 – 2002. Laks = Salmon, Ørret = Trout

Comments: In 2002, 36% of the escaped fish were rainbow trout. That means that approximately 390,000 salmon escaped. Of these, 61,000 fishes escaped from hatcheries.

Table 1: Efforts against escaping, comments, responsibility and time limits

Target	Efforts	Comments	Responsibility	Time limits
Fry/smolts plants, on-growing, slaughter plants and traffic by boats at sites:	Focus on training and awareness at all levels through production.	Training as a part of lawful base for doing aquaculture. A number of voluntary courses have been held during 2001/2002. Well boat crews also invited.	The authorities responsible for requirements. FHL Aquaculture contributes to make the courses available. Companies to participate in courses.	ASAP.
	Establishment of a commission for accidents/escapees. Identify causes, efforts to bring experience back to industry.	The industry has asked for this over years. Money is granted (state budget).	Authorities. Industry must push for it.	ASAP.
	Focus on R&D for improvement of efforts and to document effects of efforts made.	A number of R&D projects ongoing. A conference will be held to sum up existing knowledge and further R&D demands.	Industry and authorities to get R&D money. NRC and Industry's R&D fund to select and finance relevant projects.	Continually.
	Improved control routines.	Directory of Fisheries is working on a special regulation for aquaculture.	Authorities for making the regulation, Industry for implementation.	Regulation from January 2004. Continued implementation.
	Continuous improvement through implementation of Environmental management systems, i.e.: ISO 14001/EMAS.	More and more medium and large companies are being certificated due to ISO 14001/EMAS. Introduction manuals for EMS have been worked out.	Industry for implementation of implementation of EMS.	Continues.
	Work for stronger reaction against companies that have escapees due to improper management and/or companies that do not report escapees.	Signals already given to the Department of Fisheries and Directory of Fisheries.	Authorities.	ASAP.

Fry/smolt production units	Better routines to avoid escapees through outlets.	Due to different technical solutions the units will identify weak points and implement efforts to secure the unit.	Industry.	Ongoing, will be finished during December 2003.
	Improve routines for smolt deliveries.	Due to different technical solutions the units will identify weak points and improve routines.	Industry.	Ongoing, will be finished during December 2003.
On-growing	Technical demands for equipment (by law).	Industry has asked for this for the last decade.	Authorities for regulations. Authorities, industry and equipment producers for working out standards.	August 2003.
	Voluntary standards for nets (until we get a law-based standard)	Most of the on-growers use this standard.	Industry and equipment producers.	Continuously.
	Increased R&D to develop new technology for surveillance of nets.	Ongoing R&D in this field.	Industry and authorities to get R&D money. NRC and Industry's R&D fund to select and finance relevant projects.	Continuously.
Slaughter plants	Improve quality and surveillance routines of slaughter nets.	Thickness of nets and testing of strength. Inspection.	Authorities and industry.	August 2003.
Well boats and other boats	Improvements of quality systems. The well boat association has a project on this.	Industry should have routines for handling visits by ships. Important things to implement in routines are available at FHL Aquaculture's internet sites.	Industry.	Ongoing, finished by December 2003.
	Continue work on grids around propellers. Regulation on this.	Industry requested this.	Authorities.	ASAP.

Annex 5 of SLG(03)9

SLG(03)8

Copies of Action Plans for Containment of Farm Salmon

European Union - Ireland

A Code of Practice for the Prevention of Stock Escapes of Irish Farmed Salmon

Introduction

- The Irish Salmon Growers' Association is committed to best environmental and husbandry practice in accordance with the principles of sound, sustainable development.
- ISGA is committed to ensuring that transparent codes relating to these principles are applied evenly throughout the industry; ongoing communication and co-operation between producers and the state is vital to ensure the long-term success of such codes.
- ISGA, along with our colleagues in other North Atlantic salmon-producing nations, have concluded a groundbreaking agreement with NASCO on a Code of Containment for Farmed Salmon. This has directly led to the development of this current document.
- It is the aim of the ISGA, through the promotion of the following procedures, to assist the Irish salmon industry in reducing to the absolute minimum any opportunity for salmon to escape from farms through failure of management, equipment or procedure. It is recognised that there is a potential for unavoidable natural catastrophes or uncontrollable outside forces to damage farms and potentially cause escapes. It is the aim of this document to ensure all events within the control of the farmer are managed to the highest standards in order to ensure full stock containment.
- The Irish salmon industry works in a unique physical and legislative environment within Europe. It is in the best interests of all farmers to ensure the highest farming standards are adhered to from both an economic and environmental viewpoint.
- It is, therefore, agreed that all ISGA members shall follow this Code of Practice for the containment of stock and the reporting of any escape that may occur. These procedures may be included in farm licence applications, including Environmental Impact Statements, in-house procedure manuals at the farm, appropriate Quality Assurance Schemes and also in Co-ordinated Local Aquaculture Management Plans.

1. Site Selection and Location

1.1 All fish farm boats, barges, nets and sea pens shall be adequately marked so as not to be a navigational hazard or obstruct the movement of sea traffic. All navigational marking shall comply with regulations as issued by the Department of Marine and Natural Resources.

1.2 Site location shall give due consideration to prevailing weather conditions in the area.

1.3 On choosing a site, in consultation with the equipment suppliers and the farm's insurance company, the farmer shall determine the most appropriate equipment, mooring system, pens, nets, etc. to be used and their suitability for the specific location and purpose intended.

1.4 In the case of a new site, where a full Environmental Impact Statement is required, it shall, as a matter of course, assess wave climate, hydrography, prevailing weather conditions and any other factors which may cause stress to pens and nets.

2. Pen Structures, Tank Systems

2.1 The selected structure shall be designed and constructed so as to be capable of withstanding any reasonable environmental or extreme weather conditions that may be experienced at the site. Moorings in particular must be designed with adequate strength to withstand the worst conditions to be expected.

2.2 All pens shall be installed in a professional manner and comply with the manufacturer's instructions and specifications. The farm should, where possible, engage the manufacturer to oversee the completed mooring installation.

2.3 All pens shall comply with DoMNR engineering requirements regarding anchorage, stability, strength and buoyancy.

2.4 All pens shall be individually identifiable and appropriate records maintained for each unit with regard to stocks as well as maintenance and repair records.

2.5 Pen moorings shall be compatible with the pen units installed. Installation shall be carried out to ensure that all loads or stresses imposed on the unit are distributed in accordance with its design and that the unit has adequate movement and flexibility. Moorings shall be installed in consultation with the pen and mooring manufacturer and tested regularly; the underwater fitting and chains should be inspected at least once every two years.

2.6 Tank systems should be designed to effectively contain fish and minimize the possibility of escape; where the outflow from tanks passes into a settling pond the outflow from the settling pond should incorporate a screen of suitable size and construction to avoid escape.

3. Pen Nets

3.1 The design of the net should account for extreme weather conditions likely to be encountered at the site and due consideration given to the net's ability to withstand such conditions. Net design shall ensure that under pressure stresses are directed into reinforced areas of the net specifically designed to deal with this and not into the main body of the net. The pen collar or waterline area of the net is more exposed to UV light and abrasion than the rest of the net, therefore it should be suitably reinforced.

3.2 Pen nets shall be compatible with the pens being used and installed to manufacturer's specifications.

3.3 Pen nets shall be manufactured from a material of suitable quality that is fit for the purpose intended. All nets shall be treated with a UV-inhibitor in order to prevent deterioration from exposure to ultraviolet light.

3.4 Nets shall be tested on a regular basis during their life-span, including breaking strength, in compliance with manufacturer's and insurance company instructions and always visually inspected from above water and by divers in the immediate aftermath of extreme weather conditions.

3.5 In order to reduce the risk of drag and tear minimum recommended clearances (as defined by the net manufacturer) between the base of the pen and the sea floor shall be adhered to at all times. Appropriate clearances are required from neighbouring cages and sub-surface weights used to maintain net shape.

3.6 Appropriate and effective predator deterrence devices should be employed. These should be upgraded as more effective and cost efficient methods become available.

3.7 Each net should be marked and identifiable; all nets should have clear records showing a detailed history of their use, i.e. age, frequency and results of stress testing, last area of use, etc.

3.8 Farms should have enough spare nets in good condition available at all times to replace damaged nets on all pens.

4. Farming Practices and Staff

4.1 Daily on-farm procedures shall be executed in a professional and careful manner to ensure that the highest standard of farming practice is achieved.

4.2 Due consideration and careful planning shall be given to any procedure that may increase the possibility of escape such as grading or fish transfer. Towing of stocked pens requires supervision on both the boat and the pen being towed. Diving personnel should be on stand-by where tows have to navigate past or over potential hazards.

4.3 The use of boats on site shall be conducted so as to minimize any possible damage that may occur to nets or pens. Where possible, boat propellers should be fitted into wells or fitted with guards to minimize the risk of contact with nets or rope.

4.4 Farm employees shall be suitably experienced or trained for the work required and be familiar with the farm's Comprehensive Emergency Plan.

5. Preventative Measures

5.1 Each licensed site shall have a maintenance and inspection programme designed specifically for conditions at that site, including good housekeeping and the removal of surplus or unused equipment on site. Net cleaning or changing shall be regular to prevent undue stresses on nets consequent to fouling. Apart from the nets, all associated waterborne structures shall be subject to maintenance, inspection and repair procedures on a regular basis to minimize the risk of escape. The farm shall ensure the regular removal of fouling in situ of the pen collar, floats and related structures within the photic zone.

5.2 Each site shall devise a storm procedure detailing actions to be taken to ensure the site is prepared in the event of adverse weather; this shall include follow-up procedures for the inspection and testing of all nets and equipment after the storm. Measures to move pens to alternative sheltered sites in the event of forecasted very extreme weather should be agreed with the Department of Marine and Natural Resources.

5.3 All nets, screens and pen structures must be cleaned and inspected before new stock is added.

5.4 Precautions should be taken to protect stock and structures against malicious damage, i.e. by installing security systems where necessary.

5.5 When not in use nets should be stored in a dry area that is vermin-free and away from direct sunlight.

5.6 Nets should only be put in long-term storage after cleaning as decomposition of organic material on the net during storage can lead to deterioration of quality.

6. Record Keeping

6.1 Maintenance records should be kept for each pen unit detailing repairs and tests, net changes, grading, transfers, treatments and any predator problems.

6.2 In order to assist in quantifying the number of escaped fish should an incident occur, adequate stock records should be maintained detailing numbers, types, origin and year classes of fish per pen unit.

7. Notification of Escapes

7.1 In the event of an escape the licensee shall notify the Department of the Marine and Natural Resources, Coastal Zone Administration Division, Leeson Lane, Dublin 2, the appropriate Regional Fishery Boards and the Irish Salmon Growers' Association within twenty-four hours of the escape. The licensee shall make available records of fish escaped, including numbers, types, origin, and year classes.

8. Measures for Recapture of Escaped Fish

8.1 The licensee should liaise with the local Fisheries Board on methods best suited to the recapture of escaped fish.

ISGA
April 2002

Russia

Special actions in connection with preventing escape of fish from cages

1. The establishing of fish cages is done by Russian and Norwegian specialists in accordance with the technical specifications and the relief of the area. The specialist should have a high level of competence.

2. To prevent fish from escaping from the cages and to enhance the security of the cages from any external actions, the floating construction (the fish net and the cage) must be strengthened by a net that is attached in between the high end of the structure and the bottom. A net to prevent birds from entering should be stretched over the cages. The net meshes in the fish net should have varying sizes according to the size of the fish. The fish nets are regularly inspected and changed when necessary (the reasons include the need for a different mesh size or sea algae growth).

3. Equipment necessary to maintain 24-hour lighting of the areas under water should be installed.

4. A diver should be available to proceed with inspection of the technical condition of the farming complex. If necessary, the diver should be able to conduct the necessary repairs on the spot. In addition to this, under-water cameras should be used in order to survey the technical situation and the state of the fish in order to prevent problems that might occur.

5. In order to prevent fish from escaping from the cages, the equipment necessary to ensure maximum security on a 24-hour basis should be used.

6. The areas where the cages are located should be illuminated at all times.

7. There should be a 100-metre zone around the cages where fishing and boat traffic should be illegal.

8. In case of fish escaping immediate measures should be implemented within two hours after the escape is discovered. A net with the correct net mesh size should be set in an effort to recapture escaped fish. In case of fish escaping, the following should be informed immediately within two hours of the discovery: Murmanrybvod; the regional inspection for fish surveying; the regional and county veterinary services; PINRO; Kolkhos "Pribresjny" and OOO "Gigante Pechenga". The information that is sent to these organisations should included the following:

    - The time of the escape
    - The estimated number of escaped fish
    - The average weight
    - The age

9. Fish farming technical documentation should be developed.

Executive Summary of the Report of the Sub Group on Salmon Co-operation (SalCo-Op)

Excerpt from document SLG(03)4

Inventory of Co-operative Projects between Salmonid Aquaculture and Wild Fisheries

January 2003

Prepared by:
Margaret Poole, Furnace, Newport, Co. Mayo, Ireland: salcoop@marine.ie
Kenneth F. Whelan, Marine Institute, Newport, Co. Mayo, Ireland: ken.whelan@marine.ie
Deirdre Cotter, Marine Institute, Newport, Co. Mayo, Ireland: deirdre.cotter@marine.ie

SalCo-Op Project Executive Summary

The SalCo-Op research project was carried out on behalf of the NASCO/International Salmon Farmers Association Liaison Group to establish the level of co-operative projects between aquaculture and wild fisheries interests and to identify potential areas for future co-operation.

All members of the Liaison Group and key individuals in the co-operative arena were contacted for their input. An internet search for co-operative projects was also carried out. The project was highlighted in Dave Conley's *Aquaculture Newsclips* and at two international and one national conference held in Ireland.

The regions reviewed in this study were the NASCO Commission areas (North America, West Greenland and the North-East Atlantic) and the Western States of America and Canada, where Atlantic salmon are an introduced species.

Overview of projects identified

In total eight projects were identified, covering area management, containment, enhancement and restoration. The area management projects were located in Scotland and Maine, while the other initiatives were located in Maine, New Brunswick, Scotland and Quebec. Detailed inventories for the projects were generated; these results are outlined in Appendix 3.

These projects, together with the Liaison Group's underpinning co-operative work on containment, are the basis of this report. To gain a greater understanding of the achievements and challenges facing such endeavors, a SWOT analysis was carried out:

The <u>main strengths</u> associated with co-operative initiatives are:
- benefits gained in experience and commitment,
- improved mutual understanding of the challenges and limitations facing partners,
- the establishment of foundations for future initiatives,
- highlighting of co-operative initiatives through publications.

Many <u>opportunities</u> are available to those wishing to continue with or participate in co-operative projects:
- there is potential to broaden the scope of existing partnerships,
- to develop a greater mutual understanding through discussion,
- to implement area management initiatives in new regions,
- to broaden the scope for research and proactive initiatives in partnership,
- to disseminate information on co-operative projects more widely.

Some <u>challenges</u> also exist for co-operative initiatives:
- to avail of best practice in project management,
- to be pro-active as well as reactive in establishing initiatives,
- to improve publicity of initiatives,
- working in an atmosphere of litigation.

Additional threats could arise from:

- lack of defined guidelines on best practice,
- polarisation between groups which can result in a lack of trust and mutual understanding,
- lack of funding (sources of funding are identified in Appendix 4),
- lack of commitment,
- interference from parties not involved in the co-operative initiative,
- health issues.

Recommendations/Areas for Future Co-operation

Recommendation: Based on the analysis of the projects

- The Liaison Group should evaluate the findings of this review, address the issues highlighted and determine how best to build on the recommendations. A future workshop highlighting the experiences encountered by those involved in co-operative projects is recommended.

Recommendation: Definitions

In the course of this review, the apparent lack of clarity concerning the fishery terms 'aquaculture', 'salmon enhancement' and 'salmon restoration' was noted.

Aquaculture

- It is strongly recommended that the Liaison Group should agree on a series of definitions and practical guidelines relating to restoration, enhancement, aquaculture and fish farming. Agreement on such definitions is fundamental to ensuring that optimum co-operation is facilitated between the fish farming/food and wild/recreational sectors of the aquaculture industry.

Salmon Enhancement/Salmon Restoration

- Review the NASCO definition of salmon enhancement and formulate a clear definition for stock restoration.

Potential areas for future co-operation identified were: area management, restoration, enhancement, containment strategies, education, research, fish health, environmental improvement awards and, within the two industries, dissemination of information on new technology and current best practice.

Recommendation: Areas for future co-operation

Area management

- Each region should review the concept of area management and assess the possibility of appropriate initiatives in this area.

Restoration

- Examine guidelines available for restoration in each country. Develop a code of practice for determining when restoration is appropriate.

Containment – annually each jurisdiction reports on its progress to the group.

Education

- Review the feasibility of both parties developing an education programme aimed at achieving a greater understanding of all aspects of both industries, targeted at those not covered by existing programmes.
- Evaluate the possibility of generating and promoting Post-Graduate/Post-Doctorate internships in both industries, to improve understanding and technology transfer.
- Evaluate the feasibility of establishing annual workshops co-hosted by aquaculture and wild fisheries interests to review new technological developments in both areas and to discuss current best practice within each group.
- Each region should review the feasibility of utilising distance learning or e-learning, as a method of conveying educational information.

Research

- Evaluate a taxation mechanism (% tax on fish/fish product/services exports) as a means of raising research funds in the various jurisdictions.
- Evaluate the *Link* aquaculture mechanism (50:50 – government:industry funds) as a means of raising research funds in the various jurisdictions. Establish a mechanism for wild interests to contribute.
- Establish a web site page to detail all current co-operative projects.
- Review the possibility of establishing Centres for Collaborative Studies in each region.
- Review the possibility of the farming industry mass-rearing specific stocks of smolts for research projects (e.g. marine survival projects).

Fish Health

- Review the opportunity for participation in co-operative projects relating to fish health.

Accreditation

- Review the possibility of acknowledging respective achievements by means of awards or joint publicity.

Dissemination of Information

- Review the possibility of establishing a web site to carry information on co-operative projects. Information could also be disseminated through the conference forum.

Conclusion

This review has highlighted the opportunities which currently exist to foster pragmatic co-operative ventures between the fish farming/food and wild/recreational sectors of the aquaculture industry. There is no doubt that over the past twenty years a great deal of animosity has been generated between various sectors of the industry. This is most unfortunate, as an objective overview would clearly identify food generation based on fish rearing and recreational opportunities based on fish rearing as two sides of the same coin. In moving forward it is suggested that the primary focus must relate to education and communication. Inherent in such a mind shift is a willingness to accept that negative interactions can exist but may be overcome through the co-operative efforts of all concerned. A belief that co-operative initiatives should be primarily driven by the need for an improved public image is anathema to a successful process since the essence of co-operation is the elimination or mitigation of current or potential problems. Continued commitment from all sectors is required and an acknowledgement of each other as equals is critical.

As the level of activity will no doubt vary from time to time it may be of benefit to the cohesion of the Group that a major underpinning project should be initiated; a proactive initiative on issues such as disease or parasite control, the impact of climate change on salmonid populations or salmonid genetic studies of mutual interest to the two industries.

In conclusion each region must choose its own path with regards to co-operation and what steps it wishes to take. Lack of co-operative initiatives should not be seen in a negative light, if a mature relationship exists. A sign of a mature relationship is not the quantum of activity at any point in time but the ability to work side by side in harmony, understanding each other's position on an ongoing basis and co-operating when appropriate.

ANNEX 27

Council

CNL(03)32

St Pierre and Miquelon Salmon Fisheries

CNL(03)32

St Pierre and Miquelon Salmon Fisheries

1. Last year the Council adopted a Resolution concerning cooperation with St Pierre and Miquelon which requested that the Contracting Parties encourage France (in respect of St Pierre and Miquelon) to cooperate with NASCO and its members in instituting a scientific sampling programme for the fishery at St Pierre and Miquelon in 2003. The objective of such a programme would be to gather information on the origin and biological characteristics of the catch, on the disease status of the salmon harvested and on the proportion of escapees from salmon aquaculture operations. The Resolution further requested that NASCO and its Contracting Parties should encourage France (in respect of St Pierre and Miquelon) to provide information on the salmon fishery including catch data, licensing and other management measures, reporting mechanisms, and unreported catch estimates. It was agreed that France (in respect of St Pierre and Miquelon) should be invited to attend the 2003 Annual Meeting and future annual meetings of NASCO in order to enhance cooperation and information exchange.

2. I have recently received the attached correspondence from the Ministère de l'Agriculture, de l'Alimentation, de la Pêche et des Affaires Rurales in Paris indicating that France (in respect of St Pierre and Miquelon) wishes to increase its cooperation with NASCO and will implement a biometric sampling programme, to be carried out by IFREMER scientists, during the 2003 fishing season. Furthermore, it is hoped that a genetic study will be conducted in cooperation with Canadian scientists in 2004 and consideration will be given to a disease-sampling programme in the future. France (in respect of St Pierre and Miquelon) also wishes to participate in an exchange of information with NASCO Parties managing "traditional fisheries".

3. While France (in respect of St Pierre and Miquelon) is unable to be represented at the Twentieth Annual Meeting, we have been advised informally that it is hoped that a representative will be able to attend the Twenty-First Annual Meeting.

4. In the light of this information the Council is asked to consider if it wishes to take any further action in relation to the St Pierre and Miquelon salmon fishery.

Secretary
Edinburgh
30 May, 2003

(T R A N S L A T I O N)

MINISTRY OF AGRICULTURE,
FOOD, FISHING AND RURAL AFFAIRS

Maritime Fisheries and Aquaculture Directorate

Maritime Fisheries Division

Resource, Regulation and International Affairs Bureau

3, Fontenoy place
75007 Paris
Dossier under the responsibility of :
Yann Becouarn; email: yann.becouarn@agriculture.gouv.fr
Tel: 01 49 55 82 38
Fax: 01 49 55 82 00

Subject: NASCO Annual meeting
Ref.: 1144

29 May, 2003

To: NASCO
For the attention of: Monsieur Robichaud, President

Mr. President,

Thank you for your kind invitation to take part, as an observer, in NASCO Annual meeting. I will unfortunately not be able to attend.

I wish nonetheless to make the following points concerning the fishing activity in the community of Saint Pierre et Miquelon, first of all in relation to the catch statistics and secondly in relation to the prospects concerning this species.

- Catch statistics:

As every year, please find enclosed the salmon catch statistical data for Saint Pierre et Miquelon, gathered in the context of the cooperation existing between NASCO and the local community. It must be remembered, however, that this activity is a tradition in Saint Pierre et Miquelon and that it is indeed part of the local culture. Further, the quantities harvested, which are low, remain stable around 2 tons. There is, of course, no export. The catch statistics for 2002 are comparable to those of the previous years and the management method (licences) remains unchanged.

- Prospects concerning salmon and a greater cooperation with NASCO:

France (in respect of Saint Pierre et Miquelon) wishes to increase its cooperation with NASCO to better participate in the process of understanding, conservation and management of this species. This cooperation should also reinforce the natural links which exist between Saint Pierre et Miquelon and some of NASCO's Parties. Further, this initiative is in line with the audit of the Saint Pierre et Miquelon Maritime fishing activities which took place in April 2003, as a result of the problems currently encountered in this sector (salmon are an integral part of this review).

In this context, it was decided to improve the knowledge gained on the Atlantic salmon demographic structure and on the fishing activity from the following perspectives:

- 1 - the implementation of a scientific programme by IFREMER. This programme, inspired from a project devised by NASCO, will be based on the following constituents:

  - a biometric study, commencing in the 2003 season, to better define the characteristics of the salmon population;

  - a genetic study to gain a better understanding of the origin of the salmon captured in the fishery. It is hoped that this study will be implemented in cooperation with Canada during the 2004 campaign;

  - a pathological study : such a study could be considered at a later date;

- 2 - a willingness to exchange information with some of the NASCO's Parties who manage traditional fisheries.

- 3 - an audit of the current activity management method.

This initiative as a whole should contribute to NASCO's commitment towards the understanding, conservation and management of the Atlantic salmon. I will be sure to keep you informed of the outcomes of these studies and debates.

I thank you for the attention you will give to these new developments.

Yours faithfully,

Christian Ligeard
Maritime Fisheries Assistant Manager

SAINT-PIERRE ET MIQUELON
SALMON STATISTICS

CATCHES
(in kilograms per live weight)

Years	Professional fishing	Leisure fishing	Total
1998	1,039	1,268	2,307
1999	1,182	1,140	2,322
2000	1,134	1,133	2,267
2001	1,544	611	2,155
2002	1,223	729	1,952

LICENCES GRANTED

Years	Professional fishing	Leisure fishing	Total
1998	9	42	51
1999	7	40	47
2000	8	35	43
2001	10	42	52
2002	12	42	54

N.B.: The expression “leisure fishing” corresponds to sport and recreational fishing activities whereas the phrase “professional fishing” is an incorrect expression. It refers in fact to the traditional subsistence fishing for the local community highly dependent on fishing.

ANNEX 28

Council

CNL(03)52

2004 Budget, 2005 Forecast Budget and Schedule of Contributions

North Atlantic Salmon Conservation Organization
2004 Budget and 2005 Forecast Budget (Pounds Sterling)

Section	Description	Expenditure	
		Budget 2004	Forecast 2005
1	Staff-related costs	284,840	293,370
2	Travel and subsistence	39,750	40,760
3	Research and advice	36,660	37,760
4	Contribution to Working Capital Fund	18,500	0
5	Meetings	7,500	8,630
6	Office supplies, printing and translation	21,000	25,470
7	Communications	15,000	15,450
8	Headquarters Property	-24,580	-23,570
9	Office furniture and equipment	7,250	7,460
10	Audit and other expenses	8,850	9,100
11	Tag Return Incentive Scheme	5,000	5,000
12	International Atlantic Salmon Research Fund	18,000	0
	Total	437,770	419,430

		Revenue	
		Budget 2004	Forecast 2005
13	Contributions - Contracting Parties	451,770	433,430
14	Miscellaneous Income - Interest	4,000	4,000
15	Stabilisation	-18,000	-18,000
16	Surplus or Deficit (-) from 2002	0	0
	Total	437,770	419,430

Adjustments to 2003 contributions (Pounds Sterling) to take into account confirmed 2001 Catch Statistics

Party	2001 Provisional catch	2001 Confirmed catch	2003 Contribution based on provisional catch	2003 Contribution based on confirmed catch	Adjustment to 2003 contribution
Canada	145	148	33,934	34,323	+388
Denmark (Faroe Islands and Greenland)	42	42	23,462	23,485	+24
European Union	1,428	1,407	164,381	163,040	-1,342
Iceland	87	88	28,037	28,188	+151
Norway	1,267	1,267	148,012	148,726	+714
Russian Federation	114	114	30,782	30,846	+64
USA	0	0	19,191	19,191	0
TOTAL	3,083	3,066	447,800	447,800	0

Note: A positive adjustment represents an underpayment in 2003.

NASCO Budget Contributions for 2004 and Forecast Budget Contributions for 2005 (Pounds Sterling)

Party	2002 Provisional catch (tonnes)	Contribution for 2004	Adjustment from 2003	Adjusted contribution for 2004	Forecast contribution for 2005
Canada	148	37,219	+388	37,607	35,708
Denmark (Faroe Islands and Greenland)	9	20,447	+24	20,471	19,617
European Union	1,235	168,372	-1,342	167,030	161,536
Iceland	92	30,462	+151	30,613	29,225
Norway	1,019	142,310	+714	143,024	136,553
Russian Federation	118	33,599	+64	33,663	32,235
USA	0	19,362	0	19,362	18,576
TOTAL	2,621	451,770	0	451,770	433,430

Contributions are based on the Official Catch Returns supplied by the Parties. Column totals can be in error by a few pounds due to rounding.

ANNEX 29

CNL(03)56

Press Release

Twentieth Annual Meeting
Edinburgh, Scotland
June 2 - 6, 2003

NASCO Leads the Way

Salmon Conservation Organization Makes Historic Progress in Implementing the Precautionary Approach

"We must not allow anything to happen to wild Atlantic salmon that could prejudice the rights of our children and grandchildren. The steps we are taking to implement the Precautionary Approach in our work are therefore vital."

- Jacque Robichaud, President of NASCO

The North Atlantic Salmon Conservation Organization (NASCO), an intergovernmental organization formed in 1983 to promote the conservation, restoration, enhancement, and rational management of salmon stocks in the North Atlantic Ocean, met from 2-6 June 2003, in Edinburgh, Scotland. Its members are Canada, Denmark (in respect of the Faroe Islands and Greenland), the European Union, Iceland, Norway, the Russian Federation, and the United States of America.

Through its cooperative approach, real progress has been made in addressing the poor state of the wild Atlantic salmon stocks in the North Atlantic. Nevertheless, in these early years of the 21st Century, NASCO is still facing challenges.

In the area of fisheries management, NASCO is the leader among international fisheries organizations in applying the Precautionary Approach. At its 2003 meeting, NASCO adopted a new "umbrella" resolution, the Williamsburg Resolution, that consolidates and improves its existing strategy to minimize the potential threats associated with introductions, transfers, aquaculture, and transgenics. The resolution not only provides coherent guidance to the Parties concerning the application of the Precautionary Approach to these activities, it is sufficiently flexible to allow for its adaptation in the face of new developments. Moreover, the resolution includes more thorough and transparent reporting procedures that are critical to the implementation of the Precautionary Approach. NASCO has also made further progress on its fishery management decision structure and development of habitat protection and restoration plans as part of its implementation of the Precautionary Approach.

Recognizing that wild Atlantic salmon are subject to a wide range of influences that may have some adverse impacts, the NASCO Parties have been examining the application of the Precautionary Approach as broadly as possible. In this regard, NASCO adopted at this week's meeting guidelines for developing stock rebuilding programs and a plan for creating a framework to consider social and economic factors. Additionally, NASCO agreed to further investigate and address by-catches of wild Atlantic salmon in pelagic fisheries.

The International Atlantic Salmon Research Board, a new cooperative effort for addressing marine mortality issues, reported on its progress. Significant financial commitments were made at this year's Annual Meeting by NASCO members, which will assist the Board in fulfilling its mandate. The Board will continue to seek additional contributions from private companies and individuals with an interest in wild salmon conservation.

In agreeing to halt commercial fisheries at West Greenland for 2003, all NASCO Parties recognized the continuing sacrifices made by Greenland fishermen. It was acknowledged that there will be an ongoing requirement to meet subsistence needs. With respect to the Faroe Islands fishery, it was not possible to agree on specific management measures as per the Convention to control the fishery in 2004. Nevertheless, in the event of a fishery, the Faroe Islands has agreed to take internal management decisions on the basis of current ICES advice. Significantly, France (in respect of St. Pierre and Miquelon), the only harvester of Atlantic salmon that is not a member of NASCO, has recently committed to cooperate with the Organization by implementing a research program on the St. Pierre and Miquelon fishery.

There were representatives from 15 non-governmental organizations attending the meeting from North America and Europe. They continued to participate in the work of the Organization in a positive and active manner.

The next Annual Meeting of NASCO is scheduled for June 7-11, 2004.

The report of the NASCO Annual Meeting, including the annexed documents, as well as other essential information on the Organization, can be accessed at the NASCO website: www.nasco.int.

For more information, contact:

Dr. Malcolm Windsor
Secretary
11 Rutland Square
Edinburgh, Scotland
EH1 2AS

Tel. (+44-131) 228-2551
Fax (+44-131) 228-4384
e-mail hq@nasco.int

ANNEX 30

CNL(03)0

List of Council Papers

Paper No.	Title
CNL(03)0	List of Council Papers
CNL(03)1	Provisional Agenda
CNL(03)2	Explanatory Memorandum on the Agenda
CNL(03)3	Draft Agenda
CNL(03)4	Draft Schedule of Meetings
CNL(03)5	Secretary's Report
CNL(03)6	Report of the Twentieth Annual Meeting of the Finance and Administration Committee of the North Atlantic Salmon Conservation Organization
CNL(03)7	Report on the Activities of the North Atlantic Salmon Conservation Organization in 2002
CNL(03)8	Report of the ICES Advisory Committee on Fishery Management
CNL(03)9	Report of the SALMODEL Project
CNL(03)10	Catch Statistics - Returns by the Parties
CNL(03)11	Historical Catch Record 1960-2002
CNL(03)12	Request for Scientific Advice from ICES
CNL(03)13	Returns under Articles 14 and 15 of the Convention
CNL(03)14	Report on Progress with Application of the Decision Structure for Management of North Atlantic Salmon Fisheries
CNL(03)15	Habitat Protection and Restoration – Report of a Special Session of the Council of NASCO held in Torshavn, Faroe Islands on 3 June 2002
CNL(03)16	Reports on Progress with Development and Implementation of Habitat Protection and Restoration Plans
CNL(03)17	Report of a Meeting of the Standing Committee on the Precautionary Approach (SCPA) on Application of the Precautionary Approach to Aquaculture, Introductions and Transfers, and Transgenics

CNL(03)18	Report of the Technical Workshop on Development of a Framework for Assessing Social and Economic Values Related to Wild Atlantic Salmon
CNL(03)19	Future Actions in Relation to Application of the Precautionary Approach
CNL(03)20	Unreported Catches - Returns by the Parties
CNL(03)21	Report of the First Meeting of the International Cooperative Salmon Research Board
CNL(03)22	Returns Made under the Oslo Resolution
CNL(03)23	Report of the Liaison Meeting with the Salmon Farming Industry
CNL(03)24	Predator-Related Mortality
CNL(03)25	Report on Initiatives within FAO of Relevance to NASCO
CNL(03)26	Summary of Council Decisions
CNL(03)27	By-Catches of Salmon in Herring Fisheries (Tabled by Iceland)
CNL(03)28	Report on the SALGEN Project
CNL(03)29	Draft Report of the Twentieth Annual Meeting of the Council
CNL(03)30	Response from ISFA to the Report of the Standing Committee on the Precautionary Approach, CNL(03)17
CNL(03)31	National Salmon Rivers and Salmon Fjords (Tabled by Norway)
CNL(03)32	St Pierre and Miquelon Salmon Fisheries
CNL(03)33	Report by Canada on Progress with Application of the Decision Structure for Management of North Atlantic Salmon Fisheries
CNL(03)34	Report by Canada on Progress with Development and Implementation of Habitat Protection and Restoration Plans
CNL(03)35	The Application of the Precautionary Approach as it pertains to Guidelines on By-catch of Salmon
CNL(03)36	Report by Iceland on Application of the Decision Structure for the Management of Atlantic Salmon Fisheries to the Salmon Stock in the Index River Vesturdalsá – a single river stock example
CNL(03)37	Return by Denmark (in respect of the Faroe Islands) Made under the Oslo Resolution

CNL(03)38	Overview of NASCO Atlantic Salmon Rivers and Habitat Database Project (Tabled by USA)
CNL(03)39	The Effects of Marine Predation on US Stocks of Atlantic Salmon
CNL(03)40	Annex 4 - Amended Guidelines for Stocking Atlantic Salmon
CNL(03)41	EU Salmon Fishery Information
CNL(03)42	Meeting of *ad hoc* group to Address Issues relating to the Precautionary Approach
CNL(03)43	Annex 4 - Amended Guidelines for Stocking Atlantic Salmon (First Revision)
CNL(03)44	Presentation by ICES to NASCO
CNL(03)45	Implementation of the Precautionary Approach to Management of Atlantic Salmon Fisheries in Norway
CNL(03)46	Annex 4 - Amended Guidelines for Stocking Atlantic Salmon (Second Revision)
CNL(03)47	Draft Press Release
CNL(03)48	Agenda
CNL(03)49	Revised Budget Contributions including Additional Payment to ICES
CNL(03)50	Canada's Statement to NASCO on the Adoption of the Williamsburg Resolution on the Precautionary Approach
CNL(03)51	Report of the Twentieth Annual Meeting of the Council
CNL(03)52	2004 Budget, 2005 Forecast Budget and Schedule of Contributions
CNL(03)53	Statement by the General Secretary of ICES
CNL(03)54	Preliminary NASCO Guidelines on the Use of Stock Rebuilding Programmes in the Context of the Precautionary Management of Salmon Stocks
CNL(03)55	Annex 4 – Preliminary Guidelines for Stocking Atlantic Salmon
CNL(03)56	Press Release
CNL(03)57	Resolution by the Parties to the Convention for the Conservation of Salmon in the North Atlantic Ocean to Minimise Impacts from Aquaculture, Introductions and Transfers, and Transgenics on the Wild Salmon Stocks

CNL(03)70	NGO Statement - The European Anglers Alliance
CNL(03)71	NGO Statement - Federation of Irish Salmon and Sea Trout Anglers
CNL(03)72	NGO Statement - Salmon Net Fishing Association of Scotland

Note: This is a listing of all the Council papers. Some, but not all, of these papers are included in this report as annexes.