Agenda item 5.1(a)
For Decision

Council

CNL(09)11

Final Report of the Fisheries Management Focus Area Review Group

CNL(09)11

Final Report of the Fisheries Management Focus Area Review Group

1. Focus area reports (FARs) are intended to provide in-depth assessments of the actions taken on the particular focus area under consideration and provide a basis for review of the actions taken and their efficacy in achieving NASCO's objectives. The first focus area is the management of salmon fisheries.

2. The Council established an *Ad Hoc* Review Group to review and analyse the FARs and highlight issues to be raised during the 2008 Special Session and provide questions to the Parties and Jurisdictions. This work was done during 2008 and presented to the Council last year, CNL(08)13. The Group was then asked to complete its work by assessing the extent to which the information provided in the FARs indicates that NASCO's goals are being, or will be, achieved and by suggesting additional actions to ensure the consistency of fisheries management efforts with NASCO's agreements and by preparing a comparative overview of the FARs highlighting best practice and challenges and approaches to addressing these challenges in the management of salmon fisheries. These tasks have now been completed and the Group's final report is attached.

3. In section 5 of the Report, IP(08)19, the Group's assessments of all the FARs are presented. It is clear from the Group's assessments that while enormous progress has been made in managing fisheries some challenges remain. No FARs were available to the Group for six jurisdictions and this jeopardizes the success of the review process.

4. In Annex 3 of the Report, the Group has developed recommendations on the elements that might be considered to constitute best practice in managing salmon fisheries. This is based closely on NASCO's agreements etc and is intended to address issues of lack of clarity, ambiguity and in some cases contradictory statements in these documents. The Group recommends that the Council formally adopt this guidance or, if this guidance is not acceptable, that the guidelines, agreements and definitions are revisited.

5. In Annex 5 of the Report, the Group has developed a comparative overview of the FARs. Although many of the examples of approaches being used to meet the challenges posed by the best practice guidance are not fully consistent with the guidance they all describe activities that are designed to address NASCO's agreements.

6. The *Ad Hoc* Review Group will present these findings at a Special Session open to all delegates during the Twenty-Sixth Annual Meeting when the Parties and jurisdictions will have an opportunity to respond. The Council is asked to consider the Group's report and decide on appropriate action.

Secretary
Edinburgh
7 April 2009

IP(08)19

Report of the Second Meeting of the Ad Hoc Review Group on Fisheries Management Focus Area Reports

DEFRA, 9 Millbank, London SW1P 3 JR
4 – 6 November 2008

1. Opening of the Meeting by the Coordinator

1.1 The Coordinator, Dr Malcolm Windsor, opened the meeting and welcomed the members of the Review Group to London for its second meeting. He thanked Ted Potter for the arrangements made and expressed appreciation to DEFRA for providing the meeting facilities. He referred to the importance of the Group's work in pioneering a new process within NASCO to review the measures taken by the Parties and jurisdictions on the three focus areas of management of fisheries, habitat protection and restoration and aquaculture and related activities. He noted that to date the Group had only sought clarification on the content of the focus area reports (FARs) on the management of salmon fisheries. The challenging task now before the Group was to suggest additional actions to ensure the consistency of fisheries management efforts with NASCO Agreements and to compile an overview of best practice and approaches to addressing challenges in managing salmon fisheries. This would require fairness and balance in the assessment of the FARs, clarity and consistency in identifying where additional actions were needed and diplomacy in formulating the recommendations. He stressed that the participants from the Parties are representing the Organization and the NGO representatives the international NGO community in NASCO. The Coordinator's role is to Chair the meeting and facilitate the Group's work; he would not be one of the reviewers, nor would the Assistant Secretary who would also facilitate the Group's work and serve as Rapporteur. He also stressed that it was not necessary for the Group to reach unanimous agreement on its assessments although this might strengthen its findings.

1.2 A list of participants is contained in Annex 1. The representative from Denmark (in respect of the Faroe Islands and Greenland) was unable to participate in the Group's second meeting.

2. Adoption of the Agenda

2.1 The Group adopted its agenda, IP(08)22 (Annex 2).

3. Review of the Terms of Reference and Consideration of Working Methods

3.1 The original functions of the Group as adopted by the Council, CNL(07)47, are as follows:

(a) the *Ad Hoc* Review Group shall review and analyze the Fisheries Management Focus Area Reports prepared by the Parties or Jurisdictions;

(b) in carrying out this task, the *Ad Hoc* Review Group should seek to assess the extent to which the information provided in the Fisheries Management Focus Area Reports indicates that NASCO's goals are being, or will be, achieved;

(c) the *Ad Hoc* Review Group will meet in May 2008 to review the Fisheries Management Focus Area Reports submitted for the Special Session, and collaborate to highlight issues to be raised during the 2008 Special Session and to provide any questions to the Parties or Jurisdictions by 15 May, 2008;

(d) following discussions in the Special Session on Fisheries Management, the *Ad Hoc* Review Group should prepare a short report to be submitted to the President in the course of the 2008 Annual Meeting, suggesting additional actions to ensure the consistency of fisheries management efforts with NASCO Agreements.

3.2 At its first meeting the Group had completed the tasks identified in sub-paragraphs (a) and (c) above and its report had been presented to the Council at a Special Session held during the Twenty-Fifth Annual Meeting at which the Parties and jurisdictions had responded to the questions developed by the Group. For the remaining tasks, the Group had stressed to the Council that because of the limited time available at the Annual Meeting it could not develop a fair and balanced assessment of the additional actions needed to ensure the consistency of fisheries management efforts with NASCO agreements. It had, therefore, proposed to the Council that the Parties send their responses in writing to the Group's questions to the Secretariat (and if they so chose amend their FAR to address the questions raised by the Group) by 31 July 2008. Thereafter, the Group would complete its work with a view to providing a report to the President by 31 October 2008. The Council had agreed to this proposal but, in addition to completing its original tasks, it had asked that the Group also undertake a comparative overview of the FARs highlighting best practice and challenges and approaches to addressing these challenges in the management of salmon fisheries. This overview would be presented to the Council prior to the 2009 Annual Meeting. The revised Terms of Reference are contained in document IP(08)21.

3.3 The Group decided that it would first develop recommendations on the elements that it considered comprised best practice and use these elements as a basis for identifying where additional actions were required by a jurisdiction to ensure consistency of fisheries management efforts with NASCO's agreements. In accordance with its TORs, the President would be asked to convey its findings to the Parties and jurisdictions indicating that while no response was expected the Group would welcome corrections to any factual errors or misinterpretation of the FARs made by the Group. The Group would also develop a comparative overview of approaches to addressing challenges in the management of salmon fisheries. The Group's report and its findings would not be made available until after the deadline for the Parties and jurisdictions to respond to the letter from the President at which point both the Group's findings and any responses from the Parties would be made available in the Group's report to the Council.

4. Consideration of the elements of 'Best Practice' in management of salmon fisheries

4.1 A draft document detailing the elements that might be considered to constitute best practice in managing salmon fisheries was presented, IP(08)18. In terms of management of salmon fisheries, best practice was interpreted as those actions that are most likely to achieve NASCO's objective of promoting the diversity and abundance of wild salmon stocks. The Parties had invested considerable time and effort, drawing on the wide expertise available to them, in developing NASCO's agreements relating to the conservation, restoration, enhancement and rational management of salmon stocks and the Group had agreed that the elements contained in these agreements represent areas around which guidance on best practice should be developed. The intention in developing this guidance on best practice for the management of salmon fisheries is to assist the Parties and their jurisdictions in making further progress in implementing NASCO's agreements, to provide a basis for more consistent approaches to the management of salmon fisheries around the North Atlantic and to assist in the identification of what additional actions may be required. After some revision the Group agreed Draft NASCO Guidance on Best Practice for the Management of Salmon Fisheries, IP(08)23 (Annex 3).

4.2 The Review Group based this best practice guidance closely on the various NASCO guidelines, agreements and definitions relating to fishery management. However, it was found that the wording of some of these documents was unclear or ambiguous and at times contradictory. For example, the Agreement on Adoption of a Precautionary Approach, CNL(98)46, indicates that priority should be given to conserving the productive capacity of the resource. However, NASCO agreements also allow for the operation of fisheries on socio-economic grounds when stocks are below conservation limits (CLs). The basis on which such decisions may be taken on socio-economic grounds is not clearly prescribed. A second example relates to the use of biological reference points; the Agreement on Adoption of a Precautionary Approach, indicates that stocks should be managed by means of CLs and management targets (MTs), but the Decision Structure, CNL31.332, indicates that alternative measures of abundance may be used.

4.3 The Group recommends that the Council consider formally adopting the draft guidance on best practice, IP(08)23, as a way of providing clarification for the guidelines, agreements and definitions relating to fishery management. If this guidance is not adopted, the Group recommends that the Council revisits the guidelines, agreements and definitions with a view to clarifying ambiguities, contradictions and lack of clarity so that management can be based upon clearer principles and in order to facilitate the work of subsequent Groups reviewing the FARs on the management of salmon fisheries.

5. Development of suggestions for additional actions to ensure consistency of fisheries management efforts with NASCO Agreements.

Jurisdictions not submitting a FAR

5.1 Before presenting its recommendations arising from the reviews of the FARs, the Group wishes to note with concern that six jurisdictions (Faroe Islands, EU-France, EU-Germany, EU-Portugal, EU-Spain, and EU-Sweden) have not presented a FAR although three of these jurisdictions (EU-France, EU-Germany and EU-Sweden) had presented information on management of salmon fisheries during the Special Session in June. Furthermore, two of these jurisdictions (EU-Spain and EU-Portugal) have not yet developed Implementation Plans either. If this, and subsequent, Review Groups are to assess whether the management actions of a Party or jurisdiction are in accordance with NASCO's agreements they need to have information from these jurisdictions. The development of Implementation Plans and subsequent reporting on progress through FARs is an essential part of the 'Next Steps' process. The lack of the fisheries management FARs means that it was impossible for the Group to assess if additional actions are required and to develop a comprehensive North Atlantic wide overview of approaches to addressing challenges in the management of fisheries. This also makes it difficult for the Council to consider fairness and balance in managing fisheries. The Group recommends that the President, on behalf of the Council, again take this up with the jurisdictions concerned. While the fisheries management Review Group has completed its work it considers it essential for the success of the reporting process and the sharing of experience that all jurisdictions submit FARs for subsequent reviews (and for two jurisdictions Implementation Plans as well).

5.2 The Group noted the following specific points in relation to salmon management in those jurisdictions that had not submitted a FAR:

Denmark (in respect of the Faroe Islands): The Faroe Islands have only four small salmon rivers but until the more recent declines in the stocks there was a commercial mixed-stock fishery regulated by NASCO in Faroese waters. An Implementation Plan has been developed. It is disappointing, therefore, that the Faroe Islands could not go the next step and produce a fisheries management FAR.

European Union – France: The Group is aware that France has some major salmon rivers, has established conservation limits for its stocks and there are issues relating to some mixed-stock fisheries. France has produced an Implementation Plan and made a presentation on the management of its fisheries at NASCO's Twenty-Fifth Annual Meeting in June 2008. It is disappointing, therefore, that France could not go the next step and produce a fisheries management FAR.

European Union – Germany: The Group is aware that Germany is taking valuable and important actions to restore and rebuild salmon stocks. Germany has produced an Implementation Plan and made a presentation on the management of its fisheries at NASCO's Twenty-Fifth Annual Meeting in June 2008. It is disappointing, therefore, that Germany could not go the next step and produce a fisheries management FAR.

European Union – Portugal: The Group is aware of the very small wild salmon stocks and their tenuous state in Portugal which, however, being at the southern limit of the range, are very important for genetic diversity. Portugal has not developed an Implementation Plan or a fisheries management FAR and the Group hopes that it can contribute to this important aspect of NASCO's work at the earliest opportunity.

European Union – Spain: The Group is aware that Spain has stocks which, being at the southern limit of the range, are important for genetic diversity but are vulnerable. Spain notified the Council that it was unable to produce an Implementation Plan and referred to the fact that salmon management is devolved to the Provinces. Such devolution is not unusual and the Group hopes that coordination within Spain will produce the necessary outcome so that it can contribute to this important aspect of NASCO's work at the earliest opportunity.

European Union – Sweden: The Group is aware that Sweden has a long history of salmon management, in rivers draining to both the North Atlantic Ocean and Baltic Sea. Sweden has produced an Implementation Plan and made a brief presentation on management of its fisheries at NASCO's Twenty-Fifth Annual Meeting in June 2008. It is disappointing therefore that Sweden could not go the next step and produce a fisheries management FAR.

Jurisdictions submitting a FAR

5.3 The Group welcomed the submission of the following twelve FARs which it reviewed, four of which had been revised following the Group's first meeting:

- Canada, IP(08)9rev;
- Denmark (in respect of Greenland), IP(08)7rev;
- EU - Denmark, IP(08)12;
- EU - Finland, IP(08)3;
- EU - Ireland, IP(08)13;
- EU - UK (England and Wales) , IP(08)5rev;
- EU - UK (Northern Ireland) , IP(08)4;
- EU - UK (Scotland) , IP(08)2rev;
- Iceland, IP(08)10;
- Norway, IP(08)11;
- Russian Federation, IP(08)8;
- USA, IP(08)6.

Methodology

5.4 In undertaking its reviews the Group took into account the responses to the questions raised with the Parties and jurisdictions following the Group's first meeting. All Parties and jurisdictions had responded to these questions during the Special Session in June 2008 and subsequently in writing. These written responses are contained in document IP(08)16 (Annex 4). The Group was also aware that the review of Implementation Plans had highlighted some aspects that needed to be addressed in the

FARs. In carrying out its assessments the Group checked if any of these aspects related to the fisheries management FARs.

5.5 The Group noted that the review process would ideally involve an exchange of information between all jurisdictions with salmon fisheries in the North Atlantic and notes the Council's efforts to encourage France (in respect of St Pierre and Miquelon), which has a mixed-stock fishery that exploits North American stocks, to accede to the Convention. Such a move should lead to greater information exchange on this fishery and, together with submission of fishery management FARs for all NASCO's Parties and jurisdictions, would facilitate a complete exchange of information for all salmon fisheries and a more complete assessment of management challenges.

5.6 The Group developed a format linked to the structure of the guidance on best practice (see Annex 3) to facilitate an assessment of the consistency of fishery management actions as detailed in the FARs with the guidance on best practice. Each of the FARs was assessed against the elements in this format which covered the following aspects:

- Decision making process
- Description of the fisheries and the stocks exploited
- Powers to control exploitation
- Reference points (conservation limits or other measures of abundance)
- Achievement of the reference points or other measures of abundance
- Other factors influencing the stock(s)
- Management actions to control harvest
- Mixed stock fisheries (MSFs)
- Socio-economic factors
- Effectiveness of management measures

5.7 For each of these elements of best practice, where there was limited or no evidence of such an approach consistent with the best practice guidance being developed or if the approach was considered to be only partially developed recommendations on additional actions were formulated. An initial reviewer was assigned to each FAR from among the NASCO representatives on the Group and the NGOs also undertook reviews of all the FARs using the agreed format. These initial reviews formed the basis for deliberations by the whole Group and the development of its recommendations. These recommendations were then subject to a further review to ensure consistency across FARs. The Group then used the information in the FARs and its assessments of these to develop a comparative overview of approaches to addressing challenges in management of salmon fisheries (see section 6).

Recommendations – General Comments on FARs

5.8 The Group identified a number of aspects of fishery management which the majority of the FARs failed to address in detail. This meant that is was difficult for the Group to conduct a comprehensive evaluation of the consistency of these aspects with NASCO agreements and guidelines. It is hoped that these aspects, and those in the Group's first report (CNL(08)13), can be more fully addressed the next time that the Council focuses on the management of salmon fisheries. The following five areas require particular attention:

1. The Agreement on Adoption of a Precautionary Approach requires the formulation of pre-agreed management actions in the form of procedures to be applied over a range of stock conditions; most jurisdictions failed to provide a clear decision structure or alternative description of the decision-making processes for fisheries management. For future FARs it would be helpful if jurisdictions provided flow diagrams or similar descriptions of the decision-making process.

2. The Agreement on Adoption of a Precautionary Approach requires that management measures, taking account of uncertainty, should be aimed at maintaining all salmon stocks above their conservation limit, taking into account the best available information, and socio-economic factors. The NASCO Guidelines and Agreements do not make it clear how fishery management decisions are to be taken when there are conflicts between socio-economic and conservation issues. Most FARs failed to provide a clear indication of how socio-economic factors are incorporated into decisions, and in particular how decisions are taken to permit fishing on stocks when they are below their reference point. For future reporting, it would be useful if this aspect could be addressed.

3. NASCO's objective for fishery management is to promote the abundance and diversity of salmon stocks. However, the mechanisms by which diversity should be conserved are not clearly spelt out in NASCO's agreements and guidelines. The FARs provided very variable responses on the information available on stock diversity, the extent to which fishery selectivity is taken into account and the measures taken to protect separate stock components. For future reporting, it would be useful if these aspects could be addressed.

4. The NASCO Decision Structure for the Management of North Atlantic Salmon Fisheries requires that consideration be given to whether the stocks are threatened by factors other than fisheries (e.g. habitat degradation, diseases and parasites). Most FARs failed to address this issue in any detail, possibly because it was felt that this would be addressed in subsequent FARs but a brief overview of such factors would be valuable in subsequent fishery management FARs.

5. The Agreement on Adoption of a Precautionary Approach requires the assessment of the effectiveness of management actions in all salmon fisheries. While many of the FARs provided information on routine stock monitoring programmes, they generally failed to describe programmes to assess the effectiveness of their management measures. For future reporting, it would be useful if this aspect could be addressed.

Recommendations – Additional Actions

5.9 The Group agreed that the letters from the President to the Parties and jurisdictions should refer in summary form to both the general concerns identified above about the reporting and the specific recommendations for additional actions to ensure

consistency with NASCO agreements and guidelines. For most Parties and jurisdictions the Group felt that additional actions would be required to ensure consistency with NASCO's agreements and guidelines. As stated above, the lack of information provided on the interplay between stock conservation needs and incorporation of socio-economic factors in decision-making, for both single and mixed-stock fisheries, hampered the Group's ability to assess consistency with NASCO's agreements. In particular, there were very few clear indications of how decisions were taken to permit exploitation of stocks known to be below their reference points, or where information on stock status was lacking, and the consequences of these decisions for stock rebuilding. The Group's recommendations on additional actions together with any correction of factual errors or misinterpretations received back from the Parties are listed below:

Canada: The Group recognises that Canada has introduced major changes to the management of its salmon fisheries with the closure of all its commercial fisheries, restrictions on the recreational fisheries and development of agreements on the First Nation's fisheries. The Group had some difficulty in reviewing the Canadian FAR because much of the data was contained in annexed fishery management plans rather than in the form of succinct overviews, and little information was provided on Quebec. As a result, although conservation limits are used for many Canadian stocks, it is unclear how they are used in making management decisions and what is done in areas where they are not available. Although, there is a policy for the operation of mixed stock fisheries in Labrador, the Group is concerned that they are being operated despite a lack of information to characterise the exploited stocks. This is not consistent with the NASCO agreements and guidelines and needs additional actions.

Denmark (in respect of the Faroe Islands and Greenland) – Greenland: Greenland has only one salmon river, the stocks exploited in the Greenland fishery originate in other countries and management measures for the fishery are agreed internationally within NASCO. The Group recognises that in response to the scientific advice and measures agreed by NASCO, major reductions in catches have been made by Greenland and for most of the last decade the harvest has been limited to that for internal use only. Efforts are also being made to improve catch reporting in this fishery. The internal use fishery is not restricted by NASCO quota, and the Group is concerned that Greenland does not have powers to control the harvest. This is not consistent with the NASCO agreements and guidelines and needs additional actions.

European Union – Denmark: The Group notes that the Atlantic salmon resource in Denmark is currently small as a result of significant habitat degradation in the past. Valuable efforts are now being made to rebuild the stocks through stocking and habitat restoration work, and a National Salmon Management Plan has been developed. While recovery targets have been set for all major rivers, the Group notes that these appear to be fairly arbitrary and there are no clear efforts to assess whether these levels are being attained. In addition, the Group is concerned that significant in-river fishing mortality is permitted to occur on some of these recovering stocks without any assessment of the associated risks. The Group also notes that there are unregulated fisheries operating in coastal waters which may take salmon from a

number of rivers. These issues are not consistent with the NASCO agreements and guidelines and need additional actions.

The following is a summary of a response received from European Union – Denmark:

The target of 1,000 adult salmon referred to in the FAR is based on genetic conservation considerations with the aim of maintaining the genetic integrity of the wild stocks.

The sport fishery in the four most important wild salmon rivers is permitted because the number of salmon returning to each river exceeds the number required for spawning with the habitat currently available.

Catches (a few kilograms) of salmon in commercial fisheries in coastal waters are reported to NASCO. It is not known if the fisheries in coastal waters by recreational fishermen (who can use up to three gill nets) are harvesting Baltic or Atlantic salmon. If Atlantic salmon are harvested in these recreational fisheries there is no requirement to report them. However, it is illegal to harvest Atlantic salmon in the North Sea and associated fjords although this is known to occur and is assumed to be at a low level.

A major project commenced in 2008 to assess the number of wild spawners in the four most important wild salmon rivers with one river being studied each year using radio tagging. Efforts are also being made to identify the present spawning areas and to assess the contribution from naturally spawned and stocked salmon.

European Union – Finland: The Group notes that the two rivers in Finland with Atlantic salmon fisheries are both border rivers with Norway and that their management is largely through bilateral agreements. There are also significant challenges in managing salmon in the Teno where stock structure is very complex. The FAR indicates that the bilateral agreement with Norway has not been modified for a number of years, and the Group is concerned that, except for the tourist fishery, there is limited flexibility to respond to changes in the status of the stocks. Finland has indicated that it is developing conservation limits but the group is concerned that no timescale has been given; furthermore, in the absence of such reference points there should be a clear alternative approach as a basis for management decisions. These issues are of particular concern because some tributary populations have been classified as 'threatened'. These issues are not consistent with the NASCO agreements and guidelines and need additional actions.

European Union – Ireland: The Group congratulates Ireland on the major improvements in the management of their salmon fisheries in recent years. Consistent with the scientific advice, the coastal mixed-stock fishery was closed at the beginning of 2007, and exploitation is now restricted to estuary netting and angling on stocks that are above their conservation limits. These procedures fully comply with the NASCO agreements and guidelines.

European Union – UK (England and Wales): The Group notes that stocks in England and Wales are managed through the use of river specific Salmon Action

Plans and that conservation limits and management targets have been established and applied for the majority of rivers. Significant progress has been made in phasing out mixed-stock fisheries. Thus, only three of the ten fisheries operating in coastal waters in the early 1990s remain today, one of which takes very few salmon, and information is available on the stocks exploited. However, the Group is concerned that while there is a clear policy to phase-out MSFs there is no timescale for when this will be achieved and no clear indication of the measures to be applied until this occurs. This issue is not consistent with the NASCO agreements and guidelines and needs additional actions.

European Union – UK (Northern Ireland): The Group recognises that the fisheries in the Foyle system have been managed using reference points for more than thirty years and there is a programme to establish conservation limits on other rivers. Significant reductions have been made to the mixed stock coastal fisheries and compensation has been offered to the remaining nets in the Fisheries Conservancy Board area, but the Group is concerned that uncertainty remains about the timescale for the closure of this fishery and the measures to be applied until this occurs. This issue is not consistent with the NASCO agreements and guidelines and needs additional actions.

European Union – UK (Scotland): The Group recognises that Scottish rivers produce a significant proportion of the wild salmon in the Southern North-East Atlantic region. In recent decades there have been very significant reductions in netting effort and increases in catch and release in rod fisheries. Initiatives are underway to develop conservation limits for 109 catchments by March 2009, but there is still some uncertainty about whether these will be adopted for management and what will be done for the remaining rivers. The FAR provides some information on a proposed method for using catch data to assess stock status in the absence of CLs, but the Group notes that it is unclear whether this approach is being used and whether it provides a reliable reference point for satisfactory stock status. A strategy is being developed for the management of mixed-stock fisheries, but at present there is no clear policy. The Group is concerned that these fisheries are still being operated despite a lack of information to characterise the exploited stocks. These issues are not consistent with the NASCO agreements and guidelines and need additional actions.

Iceland: The Group recognises that salmon fisheries in Iceland have been largely limited to angling, and coastal mixed-stock exploitation has been banned for decades. Effort in rod fisheries is limited and reporting of catches is believed to be very accurate. A programme for developing conservations limits is underway, but the Group is concerned about the lack of a clear timescale for their development. The Group also notes a lack of clarity about how stock status is currently being assessed and how management decisions are therefore being taken; for example, the reliability of using reductions in the sale of rod licences as a measure of stock status is questionable. These issues are not consistent with the NASCO agreements and guidelines and need additional actions.

Norway: The Group notes that Norwegian rivers produce a significant proportion of the wild salmon in the Northern North-East Atlantic region. Due to declines in the stock status, Norway has implemented major reductions in fishing effort. The Finnish

FAR indicates that management of the River Tana fisheries is through a bilateral agreement with Norway, but this agreement has not been modified for a number of years, and the Group notes that, except for the tourist fisheries, there is limited flexibility to respond to changes in the status of the stock. The Norwegian FAR indicates that conservation limits have been established for 181 rivers, representing approximately 90% of the riverine catches, and there is a programme for developing them for other rivers. In the absence of CLs, where stocks are being managed on the basis of catch statistics, it is unclear whether this approach provides a reliable basis for sound fishery management. Although the FAR includes guidelines for the management of mixed-stock fisheries, the Group is concerned that it is not clear how these are being applied in the management of coastal fisheries, particularly in the Finnmark Region. These issues are not consistent with the NASCO agreements and guidelines and need additional actions.

Russian Federation: The Group notes that all fisheries for salmon in the Russian Federation are licensed, and there are comprehensive controls on exploitation by means of TACs and quotas, which are applied to all removals. Quotas in mixed stock fisheries are being gradually reduced, and catch and release is widely employed in recreational rod fisheries. The Group notes that there is limited information on the status of stocks and fisheries in some Regions (e.g. Karelia) and considers that efforts should be made to address this so as to provide a more consistent basis for salmon fishery management throughout Russia. The Group is concerned that mixed-stock fisheries are being operated despite a lack of information to characterise the exploited stocks; there is therefore a need for a clearer policy and management approach for these fisheries. These issues are not consistent with the NASCO agreements and guidelines and need additional actions.

USA: The Group notes that returns to rivers in the US are very low and that eight salmon populations have been listed as endangered under the Endangered Species Act. In the context of fishery management, most directed salmon fisheries have been closed and fishing is only permitted on reconditioned broodstock in two rivers and in a small catch and release fishery in the Penobscot River. The FAR refers to an extensive evaluation of the risks of opening such a fishery and indicates that the management authorities had different views about whether to permit a spring fishery that would result in a potential mortality of up to four fish per year. Given the critically low status of this stock and the outcome of the risk evaluation, the Group is concerned that the decision to open this fishery appears inconsistent with the NASCO agreements and guidelines, though it is recognised that the likely mortality is extremely low.

6. Development of an overview highlighting best practice and challenges and approaches to addressing these changes in management of salmon fisheries.

6.1 The Council asked that the Review Group undertake a comparative overview of the fisheries management FARs highlighting best practice and challenges and approaches to addressing these challenges in the management of salmon fisheries. This overview is contained in document IP(08)24 (Annex 5). One of the purposes of developing and reviewing the FARs is to facilitate the exchange of information and transfer of knowledge on the management of salmon fisheries envisaged in the Strategic

Approach for NASCO's 'Next Steps', CNL(05)49, and to facilitate an assessment of progress towards fairness and balance in the management of distant-water fisheries. The Review Group has structured this comparative overview around its Best Practice Guidance, IP(08)23. It has identified a range of approaches being used by jurisdictions to try to meet the challenges posed by each of the ten elements of the Best Practice Guidance. Although many of these examples are not fully consistent with the Best Practice Guidance, they all describe activities that are designed to address various aspects of NASCO's agreements and guidelines relating to salmon fisheries management.

6.2 The overview has highlighted the different approaches that are being used by jurisdictions in the management of salmon fisheries. These differences are to be expected given the different ownership of the fisheries, the nature of the fisheries and the extent of the resource. However, it is clear that considerable progress is being made in incorporating the internationally agreed principles in NASCO's various agreements but that some significant challenges remain to be addressed. In this regard, the next FARs on fisheries management will provide a good opportunity to assess progress in addressing these challenges.

7. Arrangements for the 2009 Special Session

7.1 The Group had an initial discussion on the structure and content of its presentation at the 2009 Special Session. It agreed that this should include a brief introduction describing the task, the way it had approached its work and the nature of its reviews highlighting the transparency of the process with NGO involvement. It would then summarise the best practice guidance, its recommendations for additional actions, and the overview of approaches to meeting management challenges. Finally, the Group would seek to highlight the lessons learned both for future fisheries management FARs and the work of Groups on other focus areas. The Group agreed that it would work by correspondence to finalise the arrangements for the presentation at the 2009 Special Session when further details of the time available at this session were confirmed.

8. Report of the Meeting

8.1 The Group agreed a report of its meeting.

9. Any other business

9.1 There was no other business.

10. Close of the Meeting

10.1 The Coordinator thanked all the members of the Group for their very valuable pioneering work in what was a central element in the 'Next Steps' for NASCO process.

Annex 1

List of Participants

Mr Hugh Campbell-Adamson	Association of Salmon Fishery Boards, UK
Dr Peter Hutchinson	NASCO Secretariat
Mr Ted Potter	CEFAS, UK
Ms Sue Scott	Atlantic Salmon Federation, Canada
Mr Oyvind Walso	Directorate for Nature Management, Norway
Dr Malcolm Windsor	NASCO Secretariat (Review Group Coordinator)
Mr Tim Young	Fisheries and Oceans, Canada

Annex 2

IP(08)22

Second Meeting of the Ad Hoc Review Group on Fisheries Management Focus Area Reports

Agenda

1. Opening of the Meeting by the Coordinator
2. Adoption of the Agenda
3. Review of the Terms of Reference and Consideration of Working Methods
4. Consideration of the elements of 'Best Practice' in management of salmon fisheries
5. Development of suggestions for additional actions to ensure consistency of fisheries management efforts with NASCO Agreements.
6. Development of an overview highlighting best practice and challenges and approaches to addressing these challenges in management of salmon fisheries.
7. Arrangements for the 2009 Special Session
8. Report of the Meeting
9. Any other business
10. Close of the Meeting

Annex 3

IP(08)23

Draft NASCO Guidance on Best Practice for the Management of Salmon Fisheries

1. Introduction

NASCO and its Parties have 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. Accordingly, their objective for the management of salmon fisheries is to promote the diversity and abundance of salmon stocks, and in support of this, they have developed the following guidelines and agreements:

- The Agreement on Adoption of a Precautionary Approach, CNL(98)46;
- The Decision Structure to Aid the Council and Commissions of NASCO and the relevant authorities in Implementing the Precautionary Approach to Management of North Atlantic Salmon Fisheries, CNL31.332
- The Minimum Standard for Catch Statistics, CNL(93)51.

A summary of the main elements of these documents is contained in Annex 1. NASCO has also agreed 'Guiding Definitions of Terms used in Salmon Fisheries Management', SCPA(00)11, which are contained in Annex 2. NASCO has also developed the following guidelines which are also relevant to the management of salmon fisheries:

- Guidelines for Incorporating Social and Economic Factors in Decisions Under the Precautionary Approach, CNL (04)57)
- Guidelines on the Use of Stock Rebuilding Programmes in the Context of the Precautionary Management of Salmon Stocks, CNL(04)55)

Best practice is defined here as a method, process or activity that is most effective at delivering a particular outcome based on repeatable procedures that have proven themselves over time. This document describes best practice for the implementation of the agreements and guidelines above as they relate to the management of salmon fisheries. The intention in developing this guidance is: to assist the jurisdictions in making further progress in implementing these agreements and guidelines; to provide a basis for and an exchange of information on more consistent approaches to the management of fisheries around the North Atlantic; and to assist in the identification of what additional actions may be required. NASCO is also seeking to improve fairness and balance in the management of homewater and distant-water fisheries.

2. Areas of 'Best Practice'

It is recognised that the size of salmon stocks, the management responsibilities and approaches, and the resources available for fishery management vary considerably among countries. The mixed-stock distant-water salmon fisheries at West Greenland and the Faroes are subject to regulatory measures or decisions agreed within NASCO, but NASCO is not,

and cannot be, prescriptive about the specific approaches that are used to manage homewater salmon fisheries. Nonetheless, the following elements of the agreements and guidelines, should be being applied in all countries in order to protect the abundance and diversity of salmon stocks, or there should be a clear timescale for introducing them.

2.1 Decision making process

a. Central to the application of a Precautionary Approach is the need to formulate pre-agreed management actions in the form of procedures to be applied over a range of stock conditions. There should, therefore, be clear descriptions available to all stakeholders of the process by which management decisions will be taken together with an indication of the types of decisions that might be expected under different stock conditions; these could take the form of a flow diagram or decision structure.

2.2 Description of the fisheries and the stocks exploited

a. A range of information should be collected on a routine basis through reporting and monitoring programmes, time series should be maintained, and reports should be published. This information should be collected for recreational, commercial, subsistence and scientific fisheries and include:
    - records of fishing activity (e.g. licence numbers, gear type, effort, location and timing);
    - catch statistics (e.g. number, size, age and origin of fish caught (both retained and released)); and
    - estimates of the level of unreported catches and other mortalities associated with the fishery.
b. Information should be sought on the by-catch of salmon in fisheries for other species and efforts made to identify their river of origin.

2.3 Powers to control exploitation

a. Managers should have the capability to regulate fishing effort and/or harvests through controls on the numbers of fish caught or the amount and type of fishing gear used so as to maintain the abundance and diversity of all river stocks;
b. These powers should allow managers to respond with sufficient speed to changes in individual stock status; furthermore, it would be desirable to be able to adjust harvest levels or fishing effort in-season to take account of actual run sizes or environmental conditions;
c. Managers should also have sufficient powers to enforce the measures that are in place to regulate fishing activity and to minimise the level of unreported catches.

2.4 Reference points (conservation limits or other measures of abundance and diversity)

a. Conservation limits (CLs) should be established to define adequate levels of abundance for all river stocks of salmon; these should be established for separate sea age components (i.e. one-sea-winter (1SW) and multi-sea-winter (MSW) salmon);
b. Ideally, these river specific CLs should be established based on data derived from each river;

c. For many river systems, however, information on the stock will be limited, in which case the CLs should be set on the basis of information derived from other rivers;
d. Where CLs have not been established, alternative measures should be used as reference points and should be shown to be effective in defining adequate stock levels;
e. Management targets (MTs) should also be established to assist fishery management such that there is a low risk of stock abundance falling below the CL, or alternative reference point; this risk level should be defined by managers;
f. Information should also be collected on the diversity of stocks (e.g. run-timing, age, size etc) to provide a basis for management.

2.5 Achievement of the reference points or other measures of abundance and diversity

a. It should be normal practice to evaluate the extent to which stock levels have met the management objectives with regard to stock abundance and diversity each year;
b. Ideally, stock levels should also be forecast for one or more years ahead to provide some predictions of future expected achievement of management objectives under current (or modified) management measures;
c. Assessments of stock abundance and diversity based on catches involve considerable uncertainty, so other sources of information should be used to confirm the status of stocks (e.g. juvenile surveys, counter and trap data); the management measures introduced should take into account the uncertainties in the data used;
d. Assessing the status of the stock and determining the need for management action should take account of the duration and degree of any failure to achieve the reference point, and the trend in stock abundance.
e. Where there is insufficient information on any failure to achieve the reference point, further research should be undertaken to understand the reason for the failure.

2.6 Other factors influencing the stock(s)

a. While the short-term response to a stock failing to exceed its reference point may be to reduce or eliminate exploitation in salmon fisheries, other factors may be driving abundance, and actions should also be taken to identify and address these problems.

2.7 Management actions to control harvest

a. In managing salmon fisheries, priority should be given to conserving the productive capacity of all individual salmon river stocks;
b. Managers should demonstrate that they are being 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;
c. Ideally, forecasts of stock abundance for all stocks contributing to the fishery would be used to determine the harvestable surplus or appropriate level of fishing effort, with in-season adjustments being made to reflect actual returns;
d. Where forecasts of abundance are not available, harvest levels could be based on historical data to assess if there is likely to be a harvestable surplus;
e. In certain circumstances fishing on a stock below its reference point may be acceptable if closure of the fishery would have undesirable social or economic impacts or have other

adverse consequences for the management of the resource. However, in such cases, fishing should clearly be limited to a level that will still permit stock recovery.

2.8 Mixed-stock fisheries (MSFs)

In addition to the guidance in 2.7, the following actions should apply to MSFs:

a. NASCO has defined MSFs as fisheries exploiting a significant number of salmon from two or more river stocks; ICES has advised that these fisheries present particular threats to stock status and that they predominantly operate in coastal areas; particular caution should, therefore, be applied in managing salmon fisheries operating outside defined estuary limits;
b. Rational management of a MSF requires knowledge of the status of each stock that contributes to the fishery; where such fisheries operate managers should have a clear policy for their management that takes account of the additional risks associated with them;
c. Management actions should aim to protect the weakest of the contributing stocks; in this context NASCO has agreed that homewater fisheries should be based on the status of individual river stocks and distant water fisheries on the status of the stock complexes defined by managers.

2.9 Socio-economic factors

a. Conservation of the salmon resource should take precedence, and transparent policies and processes should be in place to take account of socio-economic factors in making management decisions and for consulting stakeholders.

2.10 Effectiveness of management measures

a. The expected extent of the effects of management actions and the expected timescale in which they will occur should be determined so as to facilitate assessment of the effectiveness of the measures.

Summary of NASCO's Agreements in Relation to Management of Salmon Fisheries

Agreement on Adoption of the Precautionary Approach

The Agreement on Adoption of the Precautionary Approach states that an objective for the management of salmon fisheries for NASCO and its Parties is to promote the diversity and abundance of salmon stocks and that for this purpose, management measures, taking account of uncertainty, should be aimed at maintaining all stocks above their conservation limit taking into account the best available information, socio-economic factors and other factors identified in Article 9 of the Convention. It states that salmon fishery management requires at least the following:

- That stocks be maintained above their conservation limit by the use of management targets;
- That conservation limits and management targets be set for each river and combined as appropriate for the management of different stock groupings developed by managers;
- The prior identification of undesirable outcomes including biological and socio-economic factors;
- That account be taken at each stage of the risks of not achieving the fisheries management objectives by considering uncertainty in the current state of the stocks, in biological reference points and fishery management capabilities;
- The formulation of pre-agreed management actions in the form of procedures to be applied over a range of stock conditions;
- Assessment of the effectiveness of management actions in all salmon fisheries
- Stock rebuilding programmes to be developed for stocks that are below their conservation limits.

Thus it is a requirement of this Agreement that conservation limits (CLs) and management targets (MTs) be set for each river. NASCO has defined the CL as the undesirable spawning stock level at which recruitment would decline significantly. It is currently defined by both NASCO and ICES as the number of spawners that will achieve long-term average maximum sustainable yield (MSY). The MT is the stock level employed by managers in order to achieve the objective of exceeding the conservation limit for the desired proportion of years taking into account uncertainties in the data.

With regard to stock rebuilding programmes (SRPs) the Council has developed guidance on the process of establishing SRPs, what such plans might contain, and providing a link between the various guidance documents developed by NASCO in relation to management of fisheries, habitat protection and restoration and aquaculture and related activities.

Decision Structure

The Decision Structure was developed by the Council to assist with application of the Precautionary Approach to the management of salmon fisheries and to provide a basis for

more consistent approaches to the management of exploitation throughout the North Atlantic. It incorporates many of the elements contained in the Agreement on the Adoption of the Precautionary Approach described above although it indicates that alternative measures of abundance to reference points (CLs and MTs) could be used to define adequate stock abundance. It outlines a management procedure for both single and mixed stock fisheries (MSFs) as follows:

- Describe the fishery;
- Specify the reference points (conservation limit and/or management target) or alternative measures used to define adequate abundance;
- Describe stock status relative to the measure of abundance;
- Assess if the stock(s) is (are) meeting other diversity criteria;
- Assess if the stock(s) is (are) threatened by factors other than fisheries;
- Describe the management actions to control harvest including measures to address any failure or trend in abundance and diversity taking into account pre-agreed procedures;
- Provide an outline of the measures to monitor the effect of management measures, identify any information deficiencies and a timeframe for resolution.

While the Decision Structure is not prescriptive it does provide a framework for the management of salmon fisheries that is intended to be used widely by managers with the intention that management decisions are taken in accordance with an assessment of risk, such that, in the face of uncertainty, there is a low risk to abundance and diversity of the stock.

Minimum Standard for Catch Statistics

The Minimum Standard for Catch Statistics recommends *inter alia* that: catch statistics should include catches from all components of the salmon fisheries where these are retained and that measures to assess unreported catches and to reduce their level should be encouraged.

SCPA(00)11

Guiding Definitions of Terms Used in Salmon Fisheries Management

Distant water fisheries: Fisheries in areas outside the jurisdiction of the country of origin. With respect to the NASCO Convention this specifically refers to fisheries under the jurisdiction of the Faroe Islands and Greenland.

Homewater fisheries: Fisheries within the jurisdiction of the countries of origin (within 12 miles).

Population: A group of salmon, members of which breed freely with each other, but not with others outside the group. The smallest group that can be usefully managed.

Stock: A management unit comprising one or more salmon populations. This would be established by managers, in part, for the purpose of regulating fisheries. (The 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").

Mixed stock fishery: A fishery exploiting a significant number of salmon from two or more river stocks.

Conservation: The process of ensuring that the abundance of salmon in a stock is maintained at or above a satisfactory level (i.e. above the conservation limit with an agreed probability) and that natural diversity is maintained.

Conservation Limits (CL): CLs demarcate the undesirable spawning stock level at which recruitment would begin to decline significantly. The level cannot be used in management without also defining the acceptable probability (e.g. proportion of years) when the stock may be permitted to fall below the CL.

Currently NASCO and ICES define the CL as the spawning stock level that produces maximum sustainable yield. Formerly referred to as Minimum Biologically Acceptable Level (MBAL) or a Spawning Target.

Management Target (MT): The MT is the stock level employed by managers/scientists to aim at in order to achieve the objective of exceeding the CL for the desired proportion of years and for achieving other management objectives. The MT will therefore be greater than the CL with the margin between them at least reflecting the risks, decided by managers, of stocks falling below the CL .

Stock Rebuilding Programme (SRP): An SRP is an array of management measures, including possibly habitat improvement, exploitation control and stocking, designed to restore a stock above its conservation limit. An SRP could be a part of setting routine management plans.

Annex 4

IP(08)16

Answers to the issues raised with, and questions for, the Parties and relevant jurisdictions

Canada

Reference points:

The Gulf Region Integrated Management Plan indicates that the present conservation limits will be retained until such time as more 'finite stock-specific conservation level criteria become available'. The report indicates that these will be developed nationally. What is the timescale for development of these criteria?

Conservation limits or reference points have been defined. All are subject to review and updates as more information becomes available. There are no set deadlines for this to take place.

Stock status and abundance criteria:

The report indicates that there are about 900 salmon rivers and that about 70 of these rivers are assessed scientifically. This is a comprehensive monitoring programme, but almost half of these assessed rivers are in Quebec while in Labrador, where there is a mixed stock fishery, four rivers are monitored. Will the monitored sites in Labrador be maintained and are there plans to expand this monitoring in future?

The focus area report does not include details on how many stocks will be assessed in the future. The objective would be to have as many rivers as possible assessed but environmental conditions (ie. high water, remoteness), fisheries management priorities, and resources all affect which rivers are actually assessed in any year. On a large number of other rivers, indicators or proxies of stock status are collected such as juvenile abundance as an index of recent stock status. These indicators are generally not presented in the ICES report of adult returns and spawners but are used in regional assessments of stock status.

Mixed stock fisheries:

The report refers to the introduction of measures, including prohibition of larger mesh nets, in 2006, to reduce the catch of large salmon in coastal areas of Labrador. The report indicates that the effectiveness of these measures will be evaluated and adjustments made if further reductions are warranted. What efforts are being made to determine the origin of the fish harvested in this fishery and what information is available on the effectiveness of the measures based on the evaluation of the fishery to date?

Sampling of the catches of the Labrador fishery is coordinated by the aboriginal groups and the Nunatsivut government. Scale samples and biological characteristics data are provided to for analysis. Based on river age of the harvests, it can be concluded that few to no fish from

the southern areas are harvested in this fishery (no age one year old smolts, few to no age two year old smolts). When the genetic stock identification capabilities are more refined, it would be possible to confirm the river origin of these samples. For now, based on where the fisheries occur, the interception of non-Labrador origin salmon is expected to be very low.

Management actions:

The report indicates that Canada's First Nations fisheries will continue to be subject to annual agreements. Are there any such fisheries exploiting stocks below conservation limits and, if so, what factors were taken into account in allowing a harvest?

The right to fish for food, social, and ceremonial purposes by aboriginal peoples is protected under the Constitution of Canada. This aboriginal right can only be infringed upon by conservation concerns. Social and economic considerations are taken into account in fisheries management decisions. In some areas, aboriginal and recreational fisheries are allowed even when stocks are below the conservation levels. In these cases, consideration is made for the overall size of the river, the size of the fisheries relative to the size of the resource, the ability to manage the fisheries in an orderly manner. For example:

- *Both aboriginal and recreational fisheries have taken place on the Miramichi River despite the stock being intermittently below conservation. The proportion of the stock removed by these fisheries depends on how far below conservation the resource is, and the importance of these fisheries to the local communities. These are taken into consideration when making fisheries management decisions.*

- *In other cases where stocks are small and the fisheries can be comparatively large or difficult to manage, the rivers are closed to all fishing (e.g. the southeast rivers of New Brunswick Gulf Region).*

- *In yet other cases, the aboriginal communities have agreed not to fish but have agreed to permit a catch and release only recreational fishery because of the social and economic value of the recreational fishery in the area. (Recall aboriginal people have priority over recreational fisheries.) This despite the incidental loss of fish which can occur in catch and release fisheries and the stock being consistently below conservation (eastern Cape Breton Island in Nova Scotia).*

The report refers to a Recovery Potential Assessment that is being undertaken for the Bay of Fundy stocks which are of special concern and protected by the Species at Risk Act. What is the timescale for completion of this assessment?

Stocks from the Inner Bay of Fundy are of special concern. Severe management measures have been implemented. A report on the Recovery Potential Assessment to address recovery planning is currently being finalized. The report, previously expected this summer, will now be available later this year. Updates on progress will be reported through the Implementation Plan process.

The report contains as annexes the management plans for Newfoundland and Labrador, Maritimes and the Gulf Region. There is no plan for Quebec. Does such a plan exist and can its key elements be summarised?

A management plan was established by Quebec and submitted for consultation. This plan has been used since 2000 and will be updated later in 2008. It will then be officially adopted. The key elements of the plan are: no commercial fishery, the river conservation limits must be met before a recreational fishery is permitted. If permitted, restrictive measures are imposed, a licence is required to capture a maximum of 7 salmon, and catch registration is mandatory within 48 hours. In-season adjustments are made if required.

Socio-economic factors:

The Group is aware of a survey of recreational fishing in Canada conducted in 2005 and released in 2007. It is understood that the information on salmon fishing is not presented separately from other species. When will the information relating to salmon fishing contained in this report be made available?

The Survey of Recreational Fishing in Canada 2005 was released in August 2007. Information from the Survey is available for Atlantic salmon and was provided at NASCO's annual meeting and to the working group on socio-economics. This information can be used as a means to measure the socio-economic importance of the Atlantic salmon recreational fishery.

Denmark (in respect of the Faroe Islands and Greenland) – Greenland

Management actions:

The report refers only to the management of the current subsistence fishery. In the event that stock abundance improves and a commercial quota is allocated, how would such a fishery be managed?

The salmon fishery is regulated according to The Greenland Home Rule Executive Order no. 21 of August 10, 2002. In case the stock abundance is improved and a commercial quota is to be set this Executive Order will also be the foundation of the salmon management in Greenland.
Management measures regulating the exploitation of salmon include a quota system, which would replace the present subsistence fishery. If a quota system is chosen the Greenland Home Rule every year would agree upon a TAC for the Greenlandic salmon fishery. The fishermen would be allowed to fish the TAC in the fishing period also decided by the Greenland Home Rule and KNAPK. Greenlandic fishing plant would be allowed to buy salmon catches and export salmon for foreign markets. It is likely those fishermen who already hold a license for salmon fishery would be first in line to receive a license for commercial fishery in case there have to be some kind of restriction on the commercial salmon fishery. Alternatively all commercial fishermen in Greenland would be entitled to apply for a license for salmon fishery.

It is reported that there is a discrepancy between the number of licences issued and the number of licences for which catch returns are made. What is known about the cause of this discrepancy?

The standard procedure of reporting in the coastal fishery is that the fish plant reports on behalf of the individual fishermen who in this way avoid too much paper work. Because the subsistence fishery in Greenland is characterized by not allowing any landings by fish plants, the individual fishermen

have to report their catches themselves. This task has not been broadly recognised and the information to the fishermen about the consequence of the lack of the standard reporting procedure has not been sufficient. As described above licensed salmon fishermen today is likely to have a "first right" for a license if a commercial quota is allocated. That is believed also to generate fishermen applying for a license just to maintain their rights if a commercial quota were to be set. This also cause the discrepancy. The conclusion is that it is likely not all catch returns are received because of changes in the usual reporting system and that there is issued more licenses than it is likely to be used.

The Review Group is aware that catches in the subsistence fishery have been increasing in recent years. The report indicates that a publicity campaign was instigated in 2006 and 2007 to improve catch reporting rates. What information is available on the success of this campaign in improving reporting of the catches in the subsistence fishery?

Licenses issued compared to "active licences" and received catch reports frequency is illustrated in the diagram below.

Year	*Catch reports*	*Licences*	*Used licences*	*Percentage of used licences*
2005	*144*	*185*	*29*	*16.0 %*
2006	*234*	*165*	*51*	*30.9 %*
2007	*226*	*261*	*105*	*40.2 %*

Further to the efforts in the recent years, table 2 in the revised FAR indicates that the number of reports received has reached a 10 year peak. There is identified a considerable change in return of catch reports in 2006 when the information campaign begun.

European Union – Denmark

Reference points:

It is noted that a target of at least 1,000 spawners annually has been set for each of four rivers. What is the basis for this target and what reference criteria are used for the management of other stocks?

Based on river areas (i.e. spawning and grow-up areas for salmon fry and parr) it has been estimated (i.e. smolt production and mortalities) that the eight rivers running to the North Sea in the course of time could have an annual spawning run of 15,000 to 20,000 spawners. In the river Gudenå going to the Kattegat in future, a potential annual spawning run is estimated to be 4,000 – 5,000 spawners (like the potential production in river Skjern Å). Present efforts to restore salmon stocks is concentrated in the four rivers still with wild fish spawning stocks. A spawning run of at least 1,000 spawners in each of the four rivers is set as a minimum success criterion.

Diversity criteria:

No information is available on the diversity of Danish salmon stocks. What efforts are being made to obtain such information and take account of this in the management of fisheries?

*The four wild salmon stocks have been genetically analyzed (1: **Nielsen, E.E.**, Hansen, M.M. & Loeschcke, V. (1996). Genetic structure of European populations of Atlantic salmon (Salmo salar L.) inferred from RFLP analysis of PCR amplified mitochondrial DNA. Heredity, **77**, 351-358 and 2: **Nielsen, E.E.**, Hansen, M.M. & Loeschcke, V. (1997). Analysis of microsatellite DNA from old scale samples of Atlantic salmon: A comparison of genetic composition over sixty years. Molecular Ecology, **6**, 487-492) and the four stocks are kept separated during the stocking programme with parr.*

Mixed stock fisheries:

The report identifies mixed stock recreational fisheries operating in Danish coastal waters but provides no information on the contributing stocks. What information is available on the effects of these fisheries on individual stocks and how is this taken into account in the management of the fisheries?

In Denmark there is no information about recreational (anglers and non-professional fishermen) fisheries and catches in coastal waters. Therefore, we have no information about the numbers caught but we think it is not a major problem.

Management actions:

The report refers to recreational fisheries in fresh water. What approach is used to control harvests in these fisheries, what account is taken of socio-economic factors and what is the proposed timescale for achieving the recovery targets?

Recreational fisheries in fresh water are only angling. In two of the rivers (wild salmon) caught salmon are released and in the other two rivers (wild salmon) limits are set for numbers taken so the rest of the caught salmon are released. Socio-economic factors are at present not considered, but a new project about the value of recreational fisheries in fresh water will be started in year 2008.

European Union – Finland

Reference points:

The Review Group recognises that progress is being made with the development of conservation limits. What is the timescale for establishing these and for utilising them in management in the rivers Teno and Naatamo?

Preparations of the matter have been started, but we need a lot more background information before we could consider the possibility to base the regulation on establishing conservation limits and their utilisation. At the moment it is impossible to predict the timescale in which the matter will proceed. A joint Finnish-Norwegian expert group is planned to be established

in 2008 that will start preparations for establishment of CL's and a management plan based on these.

Stock status and abundance criteria:

Concerns are raised about the abundance of MSW salmon from the upper tributaries and despite increasing effort in the recreational fisheries, catches in the last three years are among the lowest in the time-series. Given this information on abundance how is rod catch data being used to inform management of the fishery?

Each year comprehensive information on the stock status is taken as the starting point for considering the regulatory measures for fisheries. However, currently only tourist angling can be regulated on an annual basis and the share of rod fishing of the total catch of the Teno salmon is roughly 10% when fishing on the Norwegian coast is also taken into account.

Mixed stock fisheries:

The report refers to net fisheries along the Norwegian coast. What actions have been taken to seek cooperation with Norway in the management of this mixed stock fishery?

In 2008 a research project was launched concerning the collection of samples of the Norwegian coastal net catches, aiming at assigning the origin of the salmon in these fisheries. Finland is strongly involved in this research project.

Management actions:

The report indicates that while the management system for the majority of the fisheries is based upon a bilateral agreement dating from 1989 and is relatively inflexible, tourist angling is controlled in each country with regulations amended on an annual basis. What measures have been introduced or are planned to limit the tourist angling harvest, and is controlling this fishery alone sufficient to ensure conservation of the stocks?

Because the agreement allows annual negotiations on tourist fishing only, from time to time heavy pressure is directed to the regulation of this fishery, although its share in the total catches of salmon of the river Teno is small. Controlling this fishery is not alone sufficient for ensuring conservation of the salmon stock complex of the Teno. Regulations concerning tourist fishing are negotiated on an annual basis between the relevant regional authorities in Finland and Norway and the need for restrictions is also negotiated in these discussions. Information produced by the Finnish Game and Fisheries Research Institute on the status of the salmon stock in the river Teno constitutes the basic data for negotiations on the restrictions.

The agreement between Finland and Norway concerning the organisation of fishing in the river Teno applies to all river fishing relating to salmon in the river Teno. Apart from tourist fishing the other types of fishing are regulated as well. However, the agreement allows an annual review of only the tourist fishing. This means that the regulation of tourist fishing involves more flexibility than that of other types of fishing.

European Union – Ireland

Stock status and abundance criteria:

The Review Group notes that management is based strictly on harvesting only the surplus above the conservation limits. What efforts are made to validate the status of the stocks using other measures of abundance such as juvenile surveys, etc?

The main thrust of the assessment is based either on direct counts (counters or traps) or extrapolation from rod exploitation rates. In many instances backup information is available from electro-fishing carried out by the RFBs and CFB. Since 2006 the advice of the SSC has been that at least two of the following should be available for assessments

From SSC report 2008

- *Redd count surveys as indices of total stock*
- *Juvenile assessment surveys as indices of total stock*
- *Survey draft netting and mark recapture assessments*
- *Installation of counters including both main stems and tributaries.*
- *Operate any existing traps to obtain stock indices at least in 2007 while other surveys are being developed*
- *Use of rod catch data if a catch and release fishery is allowed on these rivers*

Significant progress towards meeting this objective was made in 2007. Specific indices of the status of stocks are being developed currently. The SSC report for 2008 includes information on catchment wide electro-fishing on 30 Irish rivers which will be used as a validation of stock status in coming years. These indices will take a number of years to establish the relationship between juvenile production and subsequent adult returns. In the short term, however, direct comparisons of the juvenile densities of rivers which have been assessed to be meeting Conservation Limits and those failing to do so may provide a relative index for rivers without any other assessment capability. There was generally good agreement between the scientific forecast of attainment of salmon Conservation Limit in 2008 from rod catch or counter data undertaken by the Standing Scientific Committee and the results of the catchment-wide electro-fishing surveys. However, while some discrepancies can be explained, there is still a significant amount of survey and research work to be carried out to develop the electro-fishing index fully.

Diversity criteria:

The report states that in many instances assessments are made for 1SW and MSW stocks separately. How are these assessments used in establishing the harvestable surplus for the fishery?

Conservation limits are established for all Irish rivers on the basis of transporting stock and recruitment parameters from rivers with stocks and recruitment relationships to rivers without time series of stock and recruitment data using a Bayesian Hierarchical Stock and Recruitment Analysis. The output from this is the Maximum Sustainable Yield in eggs for

each river. This is subsequently converted to adult spawner requirements for the purposes of providing management advice.

In a number of rivers the Conservation Limit will be achieved by the contributions of both 1SW (grilse) and MSW (spring fish). There is conservation of biodiversity and fisheries development value in identifying and protecting both life history types. It is important for the fishery manager to be able to determine how much of the Conservation Limit is likely to be met by either MSW or 1SW fish and to regulate fisheries for both components separately.

Separate Conservation limits have been derived for 1SW and 2SW stocks in all rivers based on the observed proportions of each age group returning annually or where the proportion is unknown, based on the national estimate of approximately 7 to 10% MSW (grilse stocks predominate in Irish salmon populations). Sex ratios are assumed to be 60:40 female:male for grilse and 85:15 for MSW fish (based on observation in broodstocks and other sources). Egg deposition is assumed to be 3,400 per female 1SW and 8,000 per female 2SW (again from observations in broodstocks and wild stocks). Provided the average returns to the river can be apportioned into numbers of "spring" salmon (i.e. those returning early in the year and generally large MSW salmon) and grilse or 1SW salmon then the returns can be evaluated against the age specific CL in a risk analysis and the catch option which allows a 75% chance of meeting CL is generated for each age group separately. It should be noted that separate harvest options are only provided for 17 rivers where the numbers of MSW salmon are high enough to warrant separate management advice or where there is a clearly defined and separate spring salmon fishery.

Management actions:

The report indicates that the Department of Communications, Energy and Natural Resources is advised of any measures that may be required for the management of stocks by the Regional Fisheries Boards (RFBs). What are the obligations on the RFBs to seek implementation of management measures in line with national policy?

The Fisheries Boards are agencies of the State charged with responsibility for the management, protection, conservation and development of the inland fisheries resource including salmon stocks. They are enabled in this regard by primary and secondary legislation in which they are identified as the statutorily responsible authority.

Socio-economic factors:

The report refers to a hardship scheme which was introduced for the fishermen affected by the decision to move to single stock salmon fishing only. Does this scheme have any implications for the level of fishing permitted in the fishery?

The Government decision to restrict the level of fishing to the stocks of those rivers meeting their conservation limits significantly restricted fishing permitted at sea. Recognising the impact that this would have, the hardship scheme was established for commercial fishermen and others severely affected by the curtailment of the wild salmon fishery. The scheme does not, therefore, have any implications for the level of fishing permitted in the fishery. To obtain payment from the scheme, fishermen gave an undertaking not to apply for commercial salmon fishing licences in the future.

The Review Group notes that since the closure of the mixed stock fishery, the bulk of the salmon harvested in 2007 was taken by the recreational sector. Reference is made to a direction from the Minister that there should be a re-balancing of the allocation of salmon quotas. What socio-economic and other factors will be considered in this re-balancing and will any reallocation to commercial fisheries be only to fisheries in estuaries rather than those in the ocean?

Any rebalancing between the recreational and commercial harvest would be within the surplus specified as available for exploitation in each river. The distribution of the quota for each river is determined by the Chief Executive Officer of the Regional Fisheries Board concerned following consultation with the fishery district committee, which comprises recreational and commercial fishing representatives. Decisions will be made based on historical catch, prospects for limiting the method of harvest to single stocks and other relevant local considerations. Exploitation will continue to be limited to single stocks meeting their conservation limits.

European Union – UK (England and Wales)

Mixed stock fisheries:

The Review Group notes that the Precautionary Approach principle was adopted to phase out some mixed stock fisheries. Is this same approach being applied to the management of the remaining mixed stock fisheries?

The remaining mixed stock fisheries operate in areas where information is available on the stocks being exploited. Nevertheless, additional research is being undertaken to develop genetic stock identification techniques to improve this information. The fisheries will be managed, taking account of social-economic factors and other constraints outlined elsewhere in the FAR, to ensure that the stocks being exploited are meeting their conservation limits or, where this is not the case, the fishery is not significantly prejudicing other efforts to ensure that this objective is achieved within a reasonable timescale. This is consistent with the principles of NASCO's agreements on the application of the Precautionary Approach and use of the Decision Structure.

The report indicates that 'pragmatic decisions' had to be made to define the boundaries between coastal mixed stock fisheries and estuary fisheries. What criteria are used to make these decisions?

The FAR indicates that a pragmatic decision was made to define the boundary between the coastal mixed stock fisheries and estuary fisheries in two large estuary systems in England and Wales, the Severn estuary and the Solway Firth.

Because of the highly complex nature of the fisheries in the Severn Estuary, including heritage fisheries and fisheries with private rights, it was decided to develop a specific Salmon Action Plan for the whole estuary. This plan acknowledges that any of the fisheries in the estuary might, to differing extents, be regarded as mixed stock fisheries and therefore proposes appropriate management measures in each case. The general approach has been: closure of the drift net fisheries and some of those fisheries that have not operated in recent

years; to reduce or cap fishing effort in other fisheries; and to plan a detailed evaluation of the mixed stock issues in the light of other management considerations.

The Solway Firth marks the border between England and Scotland. There are two principal salmon rivers (the Border Esk and Eden) entering the Solway which are totally or partly in England, but there is no obvious boundary between the estuaries (or common estuary) of these rivers and the coastal waters within the Solway. In English waters, a single fishery operates in the estuary/ies of these rivers employing haaf nets (see FAR Annex). The means of operation of these nets, the upstream extent of their use and the topography of the area led managers to conclude that this should be regarded as an estuarine fishery. In 2008, the seaward extent of the fishing was reduced in order that catches would be further limited to fish originating from these rivers. Fishing effort in the area is managed with the aim of ensuring the restoration of the weakest stock. Genetic stock identification is being developed for salmon stocks in UK and should aid the management of the fisheries in this area.

Management actions:

The Review Group notes that management plans are developed for the 64 'principal salmon rivers' and the Severn estuary. What is the approach to managing any salmon stocks in the remaining rivers?

The 64 'principal' salmon rivers are subject to a Ministerial Direction and their status must be reported on annually. There are a further 13 rivers shown in the FAR (Figure 1) that do not have SAPs. These generally have no catch or a very small catch (<15) of salmon and also have a significantly greater (more than 5 times) catch of sea trout. None of these rivers supports a net fishery, and the rod fisheries are managed principally to address the status of the sea trout stocks, although salmon catches are also taken into account. Other rivers lost their salmon stocks many decades ago and are in the very earliest stages of recovery; CLs are likely to be developed for these and management actions to improve salmon stocks will be included in Water Framework Directive programmes of measures as the recovery progresses.

The report includes a flow diagram indicating how the need for fishing controls is evaluated. When options are identified, how is a particular option selected and subsequently implemented?

The procedures for reviewing and selecting management options are as follows:

- *identify level of control required to meet conservation need over an appropriate timescale;*
- *assess regulatory options to achieve this;*
- *propose option(s) that best account for social and economic aspects;*
- *consult affected/interested parties informally and formally; and*
- *seek Ministerial confirmation for refined proposal.*

Timescales:

The report notes that there is a 5-10 year cycle for reviewing fishery regulations. Is there an ability to respond more rapidly to unexpected changes in stock abundance or diversity?

Management is largely by effort regulation and these regulations normally apply for a period of 5-10 years because it is difficult to assess the effectiveness of the measures over any shorter period and more frequent change is disruptive and more complex to manage. Nevertheless, the status of stocks is reviewed annually and if major new problems arise or there is an unexpected major change in the status of a stock, the authorities may review the existing byelaws or bring in new byelaws, which will take effect as soon as they are approved.

Although the mechanisms for reducing the permitted number of licences in a net fishery protects the rights of existing licence holders to continue to receive a licence, this could be superseded by a byelaw to introduce more rapid change or to close the fishery if there was clear evidence that the stock was in a particularly serious state. However, such approaches may not be used to bypass the protection afforded to licensees under normal circumstances. Provisions being proposed in new legislation would provide emergency byelaw making powers, avoiding delays for consultation. They also propose to adjust the balance between fish stock conservation and protection of licensees to more strongly favour the former.

European Union – UK (Northern Ireland)

Reference points:

The report indicates that conservation limits have been established for a number of rivers. What is the timescale for developing conservation limits on the other rivers and how is the status of these stocks currently being assessed?

The setting of conservation limits and the provision of tools to monitor compliance with them has been developed for each bio-geographical area and currently provides for stock status assessment at catchment/ river basin level.

There is a rolling programme to expand CL setting and the monitoring network to cover more key river/tributaries within main catchments to provide management information at even finer scale. This programme is reflected in the UK-NI IP. Adult salmon counting facilities are now in place on 13 of the 27 main salmon rivers in NI.

The development and refinement of methodology to assess stock size, and thus compliance with CL's, in rivers/tributaries without counting facilities using angling catch data is underway. A carcass tagging scheme provides robust catch data to facilitate this. Extensive catchment wide electric fishing surveys are conducted annually on a range of rivers in NI. The potential utilisation of juvenile indices to further develop conservation limits and assess stock status is being investigated.

Diversity criteria:

While the report indicates that there is a small component of MSW salmon in the stocks it does not indicate how this influences fishery management. How are the fisheries managed to ensure the conservation of this stock component?

The importance of conserving the small MSW component in the NI stock is recognised. Whilst CL's are not set specifically for this component, management measures to conserve MSW fish are introduced. These currently include mandatory catch and release of all fish caught by rod in the FCB area before 1 June, and a daily bag limit of 1 rod caught salmon before 1 June in the Loughs Agency Area. These measures reflect that the relatively small numbers of MSW fish enter NI rivers in the spring as determined from counter data, catch returns and scale readings.

Management actions:

The report indicates there has been a reduction in the number of nets in the coastal mixed stock fishery. What is the policy with regard to the remaining nets, how will socio-economic factors be taken into account and what is the timescale over which this policy will be implemented?

Netting in the Loughs Agency area is now restricted to the Foyle estuary. The fishery exploits a single catchment stock and is managed in year to ensure that the components of the stock are meeting CL's. It is therefore deemed to be sustainable.

It is policy to bring about a cessation of all coastal fishing in the FCB area whilst status of the Southern NEAC stock remains a concern. Discussions with the holders of the 6 remaining entitlements to fish are reaching a conclusion. These fishermen have been offered compensation to permanently forego this entitlement reflecting the socio-economic importance of salmon in NI and of the fishery to them.

The relevant NI Minister has undertaken to make a decision on a course of action regarding these remaining fishing engines by end 2008, if the fishermen have not volunteered to cease fishing by then.

European Union – UK (Scotland)

Reference points:

The report indicates that if useful conservation limits can be established they will used to set management targets designed to ensure sustainable fisheries. How will the validity of these conservation limits be assessed?

The usefulness of the derived catchment conservation limits (CL) will be assessed against our current best understanding of local stock status across Scotland and against the current national CL used for assessments of the distant water fisheries at the Faroe Islands and West Greenland.

CLs for all 109 catchments will be available by March 2009. Compliance assessments will remain preliminary until estimates of spawning stock can be refined. Until then, qualitative validation of such assessments will be made using catch and other data as comparators. Information from local managers will be factored into such assessments.

The report indicates that until useful conservation limits are available management decisions have to be based on other measures of abundance and that rod catch data are considered to be a proxy for abundance. To what extent is the rod catch methodology described in the report being used to inform management decisions? What checks are in place to confirm the accuracy of the catch figures and what allowances are made in the methodology for the effects of environmental conditions and other factors on catches?

Until useful CLs are available, management decisions have to use other measures of abundance. The outcome of detailed investigations by FRS into the use of catch data supports the view that rod catch data is a reasonable proxy for freshwater abundance

Our proposed method requires the consideration of catches over several years, which should accommodate inter-annual variation in non-fisheries effort related factors e.g. changes in river conditions. Analysis has shown that whilst the catch returns used are those reported by anglers, the data collected since 1952 show remarkable coherence between districts over the years. It is likely therefore that they provide an accurate record. It is an offence to falsify catch returns. In addition, the situation should become clearer as DSFBs begin to use their legal power[1] to collect their own catch statistics. This will provide the means for greater scrutiny and strengthening of devolved fisheries management.

Stock status and abundance criteria:

The report explains that the Decision Structure was used to evaluate the need for conservation measures on the North and South Esks and the Annan. Is it being applied to other rivers, and if not what is the basis for making management decisions?

Salmon fishery management is devolved to District Salmon Fishery Boards. Boards can apply to the Scottish Ministers, for a range of measures, when a potential salmon conservation issue is perceived. In addition, where it is apparent e.g. upon advice from Fisheries Research Services, that action is necessary but where Boards have not made an application for measures, the Scottish Ministers can make necessary regulations themselves. Full consultation would be necessary on such regulations, whether being proposed on application by a Board or by Ministers themselves.

This demonstrates the value of management of salmon fisheries being devolved to salmon fishery district level.

There are currently no applications pending for salmon conservation regulations in Scotland.

[1] http://www.opsi.gov.uk/legislation/scotland/ssi2006/20060572.htm

Mixed stock fisheries:

The report indicates that mixed stock netting accounts for 30% of salmon exploitation in Scotland. The decision structure was used to determine the need to close the Strathy Point mixed stock net fishery. What measures are being taken or planned to manage the other mixed stock fisheries so as to protect stocks that are not meeting abundance targets, and what are the timescales for their implementation?

A strategy for MSFs, is being developed under the Strategic Framework for Scottish Freshwater Fisheries[2]. All aspects of mixed stock fishing, including its impact on management and conservation, will be reviewed, taking advice from FRS and other scientists. This will consider international trends, guide lines and obligations as well as the financial issues concerning Mixed Stock Salmon Fishing. The project, which will commence in the summer of 2008, will culminate in a strategy report with associated timescales to be published by the end of 2009.

Management actions

The report refers to the use of Statutory Instruments. What is their purpose and function, and what other management measures can be used to control exploitation?

Statutory Instruments (SIs) are a form of legislation which allow the provisions of an Act of Parliament to be subsequently brought into force or altered without Parliament having to pass a new Act. They are also referred to as secondary, delegated or subordinate legislation.

Other management measures are as set out in the revised FAR.

Iceland

The following paragraphs further clarify the management of Atlantic salmon fisheries in Iceland and address specific questions from the Ad Hoc Group in the order that they were posed. It should be clarified that Atlantic salmon management in Iceland has been transferred from the Veterinary and Food Authority and is currently the responsibility of a separate "Salmon and Trout Division" within the Directorate of Fisheries, which will be referred to as the Competent Management Authority (CMA) in the following paragraphs.

Reference points:

Stocks are currently managed on the basis of maintaining stable catches but it is not clear how this is achieved, particularly considering that there is significant year to year variability in catches (the min-max ranges are typically around 5) and mean catches have changed significantly (both upwards and downwards) in individual rivers over the past 30 years. How are the catch data being used to establish the status of the stocks and to influence management decisions?

It must be stressed that the management of salmon fisheries in Iceland is not based on stable catches. Although it would be highly favourable for the marketing of rod fishing licenses we

have to accept that there are considerable fluctuations in catches due to the ever fluctuating and variable environment both in rivers and in the sea. Return-rates for salmon smolts released for enhancement show as variable returns as those for wild fish. Smolt releases can thus not be used to even out fluctuations.

The effort, however, has been stabilized in Iceland. The length of the fishing season, daily fishing hours and number of rods and nets are the same from year to year. That can to some respect be regarded as a historic Conservation Limit (CL). Since there are strong correlation between the salmon run to a river and the rod catch, the catch statistics can be used as a measure of abundance. It has, however, been observed that exploitation rate is higher when the run is small than when it is large.

The ultimate target is to estimate reference points in key rivers where information on the size of the spawning stock and recruitment measured as parr densities is available. Catch statistics will subsequently be used to transfer CL between rivers according to the historic harvest based on the size and quality of the production area for salmon in those rivers. That will be possible when more information on wetted area suitable for salmon production becomes available for each river. This will, however, take some years.

It seems likely that when the salmon catch in a river is close to or below the reference point giving maximum sustainable yield (MSY) it will give a clear signal to the Salmon Management Authority (CMA). The rivers association or the river owners will also get a clear signal through the sales of their salmon fishing licenses as the demand is likely to drop with decreased catch thus resulting in decreased fishing effort.

Diversity criteria:

The report indicates that there has been a substantial decline in the catches of MSW salmon in Iceland and that the Angling Clubs have, therefore, been requested to introduce catch and release policies. In 2006, 32% of MSW salmon were released. Does the Competent Management Authority (CMA) consider this to be adequate, what level of protection is afforded to MSW stocks in individual rivers and what will the CMA do if this voluntary approach is not successful?

As pointed out by the "Review Group" the decline of the MSW salmon in Iceland has been of major concerns. There has been a voluntary release of MSW salmon following an encouragement to anglers from fisheries associations and experts. This request has led to an increase in the "Catch and release" of MSW salmon from 32% in 2006 to almost 58% in 2007. "Catch and release" of MSW salmon has thus increased dramatically without any management actions by the CMA. Whether this level of "catch and release" is sufficient is difficult to tell. Since the main reasons for the decline of MSW salmon are not known nor the effect of the MSW decline on recruitment, we cannot foresee whether or how such actions will work in practice.

The earlier data indicates that the number of MSW fish is not only lower but the mean weight of salmon has also dropped. That might indicate that the main reason for the MSW decline relates to changes in oceanic conditions. Provisional information from the 2008 fishing season in Iceland, however, indicates that there is a great improvement in the abundance and size of grilse and MSW salmon in most Icelandic rivers, which supports this viewpoint. This

needs further studies e.g. in the on-going SALSEA research project which may shed further light on this problem. Until we have better knowledge we have to follow the precautionary principle, which has been underlying in Icelandic salmon management. We can always question whether actions taken have been adequate. It has, however, been noticed in the past that the best way of dealing with management problems is to involve the parties that have the greatest interests, which in this case are the in-river management authorities and the anglers.

In this context it should be pointed out that "Catch and release" is only one of many measures specified as a part of the "Conservation plan" to reduce the fishing mortality of MSW salmon as pointed out in the section on "Management actions". In many rivers it is only a voluntary action but once it has been specified as a part of a "Conservation plan" it would be mandatory on that particular river and enforced by the river association. The responsibility of making the appropriate "Effort" as well as " Conservation" plans thus rests with the local fisheries association (river owners), which the outfitters or angling clubs leasing the river would be obliged to follow.

Management actions:

The report indicates that the management proposals for in-river fisheries have to be set out in an Effort Plan prepared by the local Fishery Association. The Implementation Plan also refers to both an Effort Plan and a Conservation Plan but the relationship between these plans and their roles in fisheries management are not clear. What do these Plans contain, how are the management controls determined and what powers do the CMA have to make changes?
It appears that the main driver for the management of Icelandic salmon fisheries is the maintenance of catch levels and thereby their economic value. What mechanisms are available to management authorities to respond to evidence of poor stock status?

Since the enactment of a new Act on Freshwater Fisheries in 2006 (nr.61/2006) management authorities on each river, i.e. the local fisheries associations, must make a "nýtingaráætlun" (in Icelandic) that specifies the maximum effort (rod number) here referred to as an "Effort plan" as well as the effective fishing time, bait and bag limitations and any requirements to release the salmon caught here referred to as a "Conservation plan". The "Effort plan" which pertains to the number of permissible rods must apply for a period of 8 years but the "Conservation plan" refers to any other limitation on time and gear and has a more flexible timeframe. It should be stressed that the "Effort Plan" specifies the <u>maximum number of rods</u> that can be utilized, but the fisheries associations can adjust rod numbers downward, if stock status deteriorates. The upper limit of rods, on the other hand, must by law remain unchanged for the 8 year period.

Although these bear the same name in the Freshwater Fisheries Act it was decided to classify them separately in the "Implementation Plan" due to the difference in timeframe requirement. In order to construct sensible "Effort" and "Conservation" plans for the future the fisheries associations on each river must cooperate with scientists in gathering information on the stock status including information on size of the salmon run, catch statistics, spawning escapement, parr densities etc.

These plans need to be accepted and approved by the CMA after a review by the Institute of Freshwater Fisheries (IFF). Through this process the IFF can come up with advice regarding increased conservation measures and the CMA can set restrictions for exploitation

if needed. Because of fluctuations in environmental factors affecting different part of the salmon lifecycle it is likely that these plans need to be flexible and revised periodically, especially with respect to bait and bag limitations as well as requirements to release angled salmon, although the maximum rod number must remain fairly constant.

As pointed out by the review group the economic value of angling is one of the main drivers for utilizing the Icelandic salmon stocks. It is up to the CMA to decide whether change in stock status in a certain river justifies an intervention to ensure that the stock is kept above the necessary CL. Due to the economic implications such interventions must be carefully implemented in cooperation with the relevant fisheries association. There are, however, provisions in the law, which permit emergency interventions by the CMA. These are, however, rarely pursued.

Timescales:

The report suggests that the development of conservation limits for all Icelandic rivers may take 5-10 years. However, the Icelandic Implementation Plan indicates that conservation limits will be prepared for all rivers by 2009. What is the expected timescale for development of conservation limits that will be used in fishery management?

Although setting the conservation limits for individual rivers may take 5-10 years depending on the urgency for each river and available resources, there is no reason to delay the setting of "Effort" as well as "Conservation" plans. The Icelandic fishing associations have thus been urged to submit such plans prior to the end of 2008. With the changes made to the Freshwater Fisheries Act there is a clear need to confirm permissible rods on each salmon river, which is done through the official confirmation of the "Effort" plan. The "Conservation" plan will also provide considerable harvest limitations on Icelandic salmon rivers. If these plans are submitted to the Salmon Management Authorities (CMA) prior to 31 December 2008 the provisions could be valid prior to the 2009 salmon season on all the major salmon rivers. Conservations plans can be expected to be revised through official channels bi-annually or at regular intervals. Effort plans, on the other hand, must have a lifetime of 8 years as previously pointed out.

Norway

Stock status and abundance criteria:

Preliminary conservation limits have been established for 180 rivers and a programme is in place to develop conservation limits for the remaining stocks by 2009. How is stock status being assessed to support the current round of management changes on rivers without conservation limits?

- *The preferred approach would be to look for rivers amongst the 180 which could be similar or comparable to the river one is assessing, and then simply transfer the spawning target making necessary adjustments.*
- *If there are no suitable rivers amongst the 180, the assessment is done the "old fashion way", which means conducting a comprehensive stock assessment, using catch statistics and other information in order to put the river into a category, then using establish guidelines on fisheries management for each category.*

As the conservation limits are regarded as preliminary, what is being done to validate them and in what timescale?

- *We have already launched a four year research project aimed at identifying weak spots and bottle necks, and developing new methods for setting second generation spawning targets, including necessary field work.*
- *Monitoring programmes and research activities are being more focused on adult runs using fish counters and exploitation rates as means to determine run sizes.*

Management actions:

The report indicates that fishery regulations for 2008 - 2012 will be based on a number of sets of guidelines, and that County Governors are required to take these into account. What obligations are there upon local managers to follow these guidelines and how is the implementation of new management measures affected by private ownership of fisheries (e.g. in the coastal mixed stock fisheries)?

- *Fishing regulations on rivers are the responsibility of County Governors which are subordinate to the Directorate. This means that CGs have to follow guidelines.*
- *If the local management is organized well, river owners have the opportunity to develop a proposal for fishing regulations. In that case river owners have to follow the same guidelines, and County Governors have to make sure that fishing regulation are within the boundaries of the guidelines, otherwise they have to refuse the proposal.*
- *Private ownership of fishing rights affects management of fisheries in many ways.*
- *E.g. it makes it almost impossible to allocate resources from one user group to another if there is not a solid biological reason.*
- *In the sea fishery – at least in theory - anybody who owns a property with shoreline can set out a bag net. The number of fishermen participating in the fishery in any given year is therefore difficult to predict – although in practise fluctuation in number of fishermen from year to year tend to be small.*
- *But private ownership does not prevent that measures are taken.*

There are substantial numbers of fish farm escapees caught in Norwegian fisheries. How is this taken into account in assessing the status of stocks and determining the need for management measures?

- *We are very well aware of the huge problems escaped farmed salmon pose both in catch statistics, estimation of salmon runs and in relation to meeting spawning targets.*
- *The proportion of escaped farmed salmon is estimated in both coastal, fjord and river fisheries, and in the rivers also on spawning grounds.*
- *Although the monitoring program is quite limited, this information is used to estimate the wild proportion of the run.*
- *We have also asked the County Governors to make an estimate of escaped farmed salmon in each river.*
- *This year we have introduced special measures, like postponing the fishing season, in order to reduce the proportion of escaped farmed salmon on spawning grounds.*

The Review Group is aware that salmon from rivers in Finland and Russia are taken in mixed stock fisheries along the Norwegian coast. What actions have been taken to limit this interception to acceptable levels?

- *First of all we are not really sure what acceptable levels are, and we would have to consult with Russia and Finland in this regard.*
- *In the county of Finnmark, where most of this interceptory fishery occurs, fishing effort has been reduced by 25 % this year, compared to the previous 5 year period.*
- *The Directorate for Nature Management recommended even more strict regulations, but due to interventions by the Sami Parliament, proposed reductions were cut in half.*

Socio-economic factors:

The report indicates that stakeholders are consulted during the development of new management measures. What effect do stakeholder views and socio-economic factors have on decision making?

- *Regulatory process started in 2006 and was finished this spring*
- *The stakeholders were consulted formally and informally several times at all levels from national level down to in-river management*
- *Stakeholders view points are well expressed and taken into account every step of the way*
- *Salmon management is not and has never been simply conservation*
- *Fishing regulations are also in Norway a compromise between conservation and commercial and recreational interests*
- *One example is the viewpoints expressed by the Sami Parliament during that process and which lead to less strict regulations in the county of Finnmark.*

Russian Federation

Reference points:

Russia has developed conservation limits for the majority of its stocks, except those in Karelia, where data are limited and stocks are believed to be in a generally poor condition. The report indicates that in some rivers adult returns are very much larger than the conservation limits (e.g. more than 5 times), which suggests that the conservation limits may be too low. What process is there for reviewing whether the current conservation limits are correct, and how is the stock status determined in those rivers without conservation limits? What is the timescale for developing conservation limits in Karelia and how do the authorities currently use catch data to manage the fisheries.

The abundance of stocks in a number of rivers was assessed by mark-recapture method, which may overestimate the stock. However, a large difference between salmon returns and conservation limits does not create any concerns for it is only recreational fisheries, which are conducted on those rivers, predominantly catch-and-release with quotas for such fisheries established, anyway, at a very low level, which is acceptable to both scientists and managers and users.

Annually, conservation limits are reviewed for those rivers for which data on the area of spawning and nursery habitat become available or have been updated. These are those rivers for which conservation limits were originally determined by using the catchment area.

The timeframe for developing the conservation limits for stocks in Karelia has not been defined. At present only one stock, and that is in the river Keret, is exploited. There is limited fishing for salmon there for enhancement purposes and a small quota is allocated for recreational fishery. There is no fishery on other rivers in this republic.

Stock status and abundance criteria:

The Pechora river supports one of the largest salmon river stocks in the North Atlantic and has been well monitored for more than 30 years, but information on this river within the report is limited and it is not clear why the fisheries have been closed despite the adult returns being well above the spawner requirement. What was the basis for closing the fishery?

The decision to close the fisheries on the Pechora river taken in 1989 was justified from the point of view of the stock biology it was rather an administrative decision. The aim was to increase the escapement of salmon to the upper part of the river that administratively was under the governance of one of the subjects of the Russian Federation, while the commercial fishery at a barrier fence took place in the downstream of the river that was under the governance of another subject.

In 2003-2006 there were allocations of commercial quotas for the two subjects, of 0.35 to 13.5 t. The fisheries used drift nets with the mesh size 70 mm and more. In 2005-2006 there was also a quota for recreational fishery allocated annually of 0.3 t. In 2007 only a quota for scientific fishing was allocated.

The fisheries research institute responsible for provision of TAC advice for Pechora annually recommends such a level of TAC that would allow both commercial and recreational fishery. However, presently the decision to re-open the fishery is blocked at the federal level by authorities responsible for the State environmental impact assessment and, therefore, small quotas are allocated only to scientific fishing.

Mixed stock fisheries:

The report indicates that there is a policy to reduce the exploitation in the mixed stock salmon fisheries operating in the White Sea. What is the long-term management objective for this fishery and over what timescale will it be implemented?

Commercial fishing effort has substantially reduced since the development of recreational fisheries in 1990s. Management measures are aimed at reducing the commercial fishing effort and enhancing the development of recreational fisheries. These measures have led to a considerable decline in commercial catches in both rivers and coastal areas. For instance commercial catches in Murmansk region dropped from about 400 tonnes taken annually in 1980s to 100 tonnes in 1990s and to just 20 tonnes in 2007.

Today the commercial salmon fishery is viewed more as a social measure – a traditional way of fishing by indigenous people from Pomor villages along the White Sea cost. Further

reductions are unlikely to be introduced. However, restrictions other than quotas to fisheries, which take stocks contributing to mixed stock fisheries below their Conservation Limits will be considered.

Management actions:

The report indicates that all salmon fisheries are licensed and that TACs and quotas are used to control all harvests and other removals of salmon. How are the TACs established and how are quotas then allocated to the individual fisheries?

The stock status is assessed and the level of TAC then determined for each stock by the fisheries research institute subordinate to the Federal Agency for Fisheries and responsible for the development of the TAC advice. This advice is subject to the state environmental impact assessment by experts appointed by the Ministry of Nature Conservation. After the assessment is completed the Ministry of Agriculture issues an order to approve the level of TAC for Atlantic salmon, separately for the Barents Sea basin and for the White Sea basin, with each of the two TACs being a sum of TACs recommended by the fisheries research institute on a stock-by-stock basis. The next step is when the Ministry of Agriculture on the basis of advice by the Northern Science, Management and Industry Council issues an order on the allocation of quotas according to the type of fishery and then an order allocating these quotas among subjects of the Federation. In doing so it takes into account the conclusions of the state environmental impact assessment, therefore, each subject of the Federation is allocated its share of the TAC according to the status of stocks in the area of its jurisdiction. It is also in the federal authorities' power to allocate quotas for commercial fisheries to users of each of the subject of the Federation, which is done on the basis of their shares assigned for 10 years. Allocated at the federal level are also quotas for scientific fishing and for enhancement purposes. Quotas established for the fishery by indigenous people and for recreational fisheries are allocated among users by the administrations of the subjects of the Federation, i.e. at the regional level.

The report refers to illegal fishing in rivers flowing through populated areas and that 70% of the returning stock may be taken illegally in the river Umba. What is being done to manage this illegal activity?

A high level of illegal fishing on river Umba is, in the first place, due to social and economic situation in the area where it flows. The level of unemployment of the village Umba located at the river mouth is very high. Illegal fishing is the main source of income for a considerable part of the able-to-work population there. Prohibitive measures in force for many years have been of no effect. It is important opportunities are created for the community to be employed in other businesses than fishing, for instance, fish processing, extraction and processing of stones, eco-tourism.

The report indicates that 'users' can adjust the fishing effort applied to different biological groups of salmon. How is the need for such adjustments made and how are they addressed by regulatory measures?

Regulation of fishing effort applied to different biological groups of salmon can be implemented by users on a voluntary basis and based on scientific advice on how to rationally manage the stocks, that can be requested from a fisheries research institute. Such

advice is developed for specified rivers and fishing sites and takes into account specific features of a given population (stock). In particular, to reduce the fishing pressure on large females, it is recommended to exercise only catch-and-release in the beginning of the run. Such scientific advice is a supplementary regulatory measure, which may be implemented by a user in addition to mandatory measures established according to the Law on Fisheries and Conservation of Aquatic Biological Resources and Fisheries Regulations for enhancing the salmon stocks and their rational exploitation.

The report refers to possible by-catches in herring fisheries in the White Sea. What is being done to assess and manage this problem?

The fishing season for herring partly overlaps with the timing of salmon run. Fishing gears for herring (herring sein) are deployed in the coastal zone of the White Sea and there is a possibility that salmon are intercepted. Estimates of salmon by-catch in the herring fishery are not available. However, it is known, that the mesh size in the wings of herring sein and trap is such that salmon cannot be enmeshed. There are no records of reported salmon by-caught by this fishery, as according to the Fisheries Regulations when captured as by-catch all fish beyond quotas allocated to users of fishing sites must be released with as less damage as possible. The Fisheries Regulations are enforced by relevant State Control and Enforcement authorities

USA

Description of fisheries:

The report states that the subsistence fishery off West Greenland could harvest 3 – 45 % of the total documented returns to the listed rivers during the years 2000, 2001 and 2002. What is the basis for this statement?

The estimate that the internal use fishery in West Greenland could potentially harvest between 3 and 45% of the total documented returns to the listed rivers during the years 2000-2002 was derived from a Probabilistic-based Genetic Assignment model (PGA) developed in the U.S. The PGA can be used to identify the effects of fishing on individual stocks within any multi-stock complex where genetic samples from known origin are available. A finalized manuscript describing the PGA is currently awaiting peer review and publication. The PGA has been presented to, and favorably reviewed by both the US Atlantic Salmon Assessment Committee and the ICES Working Group on North Atlantic Salmon. The PGA model was applied to the 2000-2002 landings data from West Greenland. The North American component of the West Greenland harvest was genetically partitioned into country of origin. The US origin component was then partitioned to river or group of rivers of origin and adjusted for natural mortality during the return migration. The Gulf of Maine Distinct Population Segment (GOM DPS referred to above as "listed rivers") estimated contributions were then compared to the spawner estimates for those cohorts. As reported, we estimate that the harvest accounted for 3.0-46.7% of the total documented returns for those years. [NOTE: The higher end of the range was cited in our FAR as 45%, but is actually 46.7% as illustrated below.]

Our report cited years 2000-2002, but estimates are now available for 2003 as well. Our report should cite the years 2000 through 2003 and include a range from 3% to 46.7%. The estimates for each year are as follows:

2000 - 3.6%
2001 - 46.7%
2002 - 3.3%
2003 - 3.0%

Management actions:

The report refers to a wide range of measures to reduce by-catch of salmon in both marine fisheries and freshwater fisheries. These include public outreach and educational campaigns designed to reduce the potential for anglers to misidentify salmon. To what extent have these programmes been implemented?

Federal Programs:
As a condition of having a federal commercial fishing permit, reporting of bycatch of Atlantic salmon is mandatory. All federally permitted commercial fishermen receive Vessel Trip Reporting Instructions (VTR Instructions) outlining codes for all of the species that if caught must be recorded in vessel logbooks to comply with reporting requirements. Observers that are trained in species identification are also aboard some commercial vessels to document bycatch.

The NMFS and the USFWS also maintain active web pages and other outreach materials that contain up to date information on Atlantic salmon, the ESA and Atlantic salmon, federal regulations related to Atlantic salmon, as well as federally implemented recovery and restoration activities. In addition to distributing information upon request, federal biologists and managers attend certain public forums to provide information to interested individuals.

State Programs:
Maine, Connecticut, and New Hampshire all have recreational Atlantic salmon fisheries. All of these states have information for anglers on species identification, regulations, and other related species information in the form of published angler guides, web based resources, or signage located at or near known fishing sites. These resources are readily available to the public free of charge and help educate the public on release techniques for Atlantic salmon, misidentification of Atlantic salmon, and other related information on federal and state recovery and restoration programs. In some cases, for example in Connecticut, fisheries education courses and workshops are provided to the public. The Connecticut Aquatic Resources Education Program (CARE) offers free fisheries courses and workshops to interested individuals. The goal of this program is to foster resource stewardship, promote an understanding of aquatic systems and fishery management decisions and encourage both an understanding and utilization of aquatic resources.

Other Programs:
There are a number of non-governmental organizations that engage in Atlantic salmon education and outreach as part of their mission. For example, the Atlantic Salmon Federation (ASF) is in the progress of posting information on the conservation status of Atlantic salmon in Maine along with species identification information to educate anglers

and reduce the misidentification of Atlantic salmon as trout. ASF also sponsors a number of other education programs throughout New England. Most of these NGO's have active and up to date web pages, other outreach materials, and community programs all aimed at educating the public about Atlantic salmon and their habitat. Links to many of these organizations and their individual activities can be found on various state and federal web pages.

State, Federal, and Non-Governmental Organization Partner Programs:
There are also specific programs designed to educate school children on Atlantic salmon. These education programs help educate children on species identification, ecology, and restoration. The Fish Friends Program developed by ASF is a classroom program, used in 600 schools from Connecticut to Labrador that encourages stewardship of watersheds. The program is very popular with both teachers and children for its hands-on approach, as well as its flexibility and classroom-tested curriculum guide. Designed for grades 4 to 6, it has also been used in some higher grade levels of middle schools. During 2007, the Connecticut River Salmon Association (CRSA) conducted the ASF Fish Friends Program at schools in Connecticut. Trout Unlimited carried a similar message to schools in Massachusetts. Several cooperators including CRSA, US Forest Service, USFWS, New Hampshire Fish and Game, Vermont Fish and Wildlife and the Southern Vermont Natural History Museum cooperatively conducted the program in Vermont and New Hampshire. For the 2007-2008 school year 164 schools participated in this type of salmon education in the four states.

2007 marked the fifteenth year in which the Adopt-A-Salmon Family Program has been providing outreach and education to school groups in Maine, New Hampshire, and Massachusetts in support of Atlantic salmon recovery and restoration efforts. The program is administered by the USFWS Central New England Fisheries Resources Office with support from the USFWS Nashua National Fish Hatchery (NNFH), the Amoskeag Fishways, and a corps of very dedicated volunteers and Student Conservation Association interns. Most participating schools implement the program throughout the school year with highlights including a visit to NNFH for a ninety minute educational program in November, and incubating salmon eggs in the classroom beginning in January/February for release as fry into the watershed in the late Spring. In February 2007, 42 schools received 15,910 eggs to be reared in classroom incubators. Throughout the winter and spring, eggs were monitored by students until they hatched. In late spring, fry were released into the Merrimack River watershed. In November 2007, 1,532 students and 150 teachers and parents from 24 schools throughout central New England participated in the educational program at NNFH. During the visit, participants learned about the effects of human impacts on migratory fish and other aquatic species and observed Atlantic salmon spawning demonstrations.

The Review Group notes that the July 2006 Status Review for Anadromous Atlantic Salmon prepared by the state and federal agencies proposes that the rivers Androscoggin, Kennebec and Penobscot should be listed under the ESA. Is it proposed to implement this recommendation and if so in what timescale?

The draft Status Review was completed in January 2006 and underwent peer review. The Center for Independent Experts (CIE) completed the review and the BRT made revisions to the document based upon this critique. The Status Review was made available to the public during the fall of 2006. NMFS and the USFWS (collectively referred to as the Services) are currently considering the information presented in the 2006 Status Review, the comments

from the peer reviewers, and the response of the BRT to the peer reviewers to determine if action under the ESA is warranted. The Services could determine that a change to the boundaries or conservation status of the existing GOM DPS is warranted, that a separate listing action is warranted, or that no action is warranted. If the Services determined that a modification to the existing listing or a new listing was warranted, then a proposed rule will be published along with the rationale for that proposal. A proposed determination regarding the listing status of the expanded GOM DPS is expected in 2008.

Annex 5

IP(08)24

Comparative overview of the approaches used to address challenges in the management of salmon fisheries

Introduction

In the twenty-five years since NASCO's establishment, there have been enormous changes in the management of salmon fisheries all around the North Atlantic. These have included major reductions in quotas and effort, closure of some fisheries either with or without compensation payments, and increasing use of catch and release recreational fishing. These measures have been introduced in response to declining salmon abundance, both for domestic reasons and in recognition of international commitments under the NASCO Convention. Adapting the management regimes to the reduced abundance of salmon has been a considerable challenge involving sacrifices in commercial, recreational and subsistence fisheries. A wide variety of management approaches has been employed but abundance remains low, and in some areas critically low, with many stocks well below their conservation limits (CLs).

In accordance with the Strategic Approach for NASCO's 'Next Steps', CNL(05)49, each jurisdiction has been asked to prepare a Focus Area Report (FAR) on salmon fisheries management to demonstrate how it is addressing NASCO's agreements relating to the management of salmon fisheries. The *Ad Hoc* Review Group (hereinafter referred to as the Review Group) has assessed these reports, based on Best Practice Guidance that it has prepared (IP(08)23), and has commented on areas where jurisdictions are failing to fully meet the expectations of NASCO.

As part of its review, the Council also asked the Review Group to undertake a comparative overview of the fisheries management FARs highlighting best practice and challenges and approaches to addressing these challenges in the management of salmon fisheries. One of the purposes of developing and reviewing the FARs is to facilitate the exchange of information and transfer of knowledge on the management of salmon fisheries envisaged in the Strategic Approach and to facilitate an assessment of progress towards fairness and balance in the management of distant-water fisheries. The Review Group has structured this comparative overview around its Best Practice Guidance IP(08)23. It has identified a range of approaches being used by jurisdictions to try to meet the challenges posed by each of the ten elements of the best practice. Although many of these examples are not fully consistent with the Best Practice Guidance, they all describe activities that are designed to address various aspects of NASCO's agreements and guidelines relating to salmon fisheries management.

1 Decision making process

The Agreement on Adoption of a Precautionary Approach requires the formulation of pre-agreed management actions in the form of procedures to be applied over a range of stock

conditions. The NASCO Decision Structure, adopted by the Council in 2002, provides a basis for more consistent approaches to the management of exploitation of Atlantic salmon. The Council's intention was that the Decision Structure would be widely applied by managers, in consultation with stakeholders, and that the results of using it should be monitored and evaluated to ensure that the actions taken in managing salmon fisheries are consistent with the Precautionary Approach. The Best Practice Guidance therefore indicates that there should be clear descriptions available to all stakeholders of the processes by which management decisions will be taken and an indication of the types of decisions that may be expected under different stock conditions; these could take the form of a flow diagram or decision structure.

Most FARs failed to address this issue, but some jurisdictions provided a clear structure for the decision-making process across a range of stock conditions. For example:

- The FAR for UK (England and Wales) provides an informative flow diagram describing the process being used to arrive at management decisions. It involves four stages: assessing compliance with the management objective; initial screening for potential management options taking account of socio-economic and stakeholder concerns; evaluation of options that could be employed to realise the required changes in exploitation; and final selection and implementation of measures to control exploitation.
- The Irish FAR describes the procedure used to determine whether there is a harvestable surplus (i.e. the CL is being exceeded) for each river stock, and thus whether a fishery should be permitted to operate and, if so, the procedure for deciding on the conservation measures that will apply.

The Review Group also noted that there is a well established procedure operated by NASCO for setting regulatory measures for the West Greenland fishery.

The Review Group recommends that all jurisdictions should develop clear flow diagrams or alternative descriptions of the decision-making process which can be disseminated to stakeholder groups and included in the next fisheries management FARs.

2 Description of the fisheries and the stocks exploited

The Best Practice Guidance proposes that each jurisdiction should collect a range of information on all their salmon stocks and on the fisheries exploiting them. The information should include records of fishing activity, catch statistics and estimates of the level of unreported catch. Information should also be sought on the by-catch of salmon in fisheries for other species. This information should be made available to stakeholders in regular reports.

It is clear that nearly all jurisdictions are collecting comprehensive information on their salmon stocks and fisheries although the extent that this can be reported within the FARs is inevitably dependent upon the number of rivers involved. For example, Canada refers to the presence of salmon in 900 rivers, Norway to 407 and UK (Scotland) to 382.

For future reporting the Group believes that it would be valuable for all FARs to include listing of salmon rivers with a summary of catches, CLs etc. and maps showing the location

of rivers and management areas.

Catch statistics

Best practice should involve collection of statistics both for fish that are retained and those that are subsequently released as well as estimates of unreported catches. All jurisdictions collect catch statistics on their salmon fisheries but some have instigated approaches to improve the scope and reliability of these data. A common challenge identified in many of the FARs is the problem of unreported catches, both in terms of their estimation and efforts to minimise them. The following are examples of approaches being used to improve catch reporting and reduce unreported catches:

- The FAR for Iceland indicates that since 1946 catches have been required by law to be recorded in a log-book system. Under-reporting of the catch is considered to be infrequent and comprehensive information is provided including the length, weight and sex of the fish, the date of its capture, the beat fished and the fly, lure or bait used. The resulting catch statistics are considered to be a reliable indicator of stock abundance. An online system of reporting catches during the season is under development.

- In the FARs for Ireland and UK (Northern Ireland) it is indicated that carcase tagging and logbooks have been introduced to improve catch reporting and reduce unreported catches.

- The FAR for UK (Scotland) indicates that local management authorities have recently been given authority to collect catch statistics for their district in the expectation that this will lead to greater scrutiny of the data, quicker catch returns and improved assessments of unreported catches.

- In the US FAR, it is noted that illegal in-river harvests occur at low levels and actions taken to address this include closures to recreational fishing on sections of river prone to illegal fishing.

- The FAR for Greenland refers to the problem of collecting reliable catch data from the internal use fishery and describes the efforts being made to improve awareness of the need to report catches through an information campaign targeting salmon fishermen.

Origin of fish caught

Rational management requires knowledge of the origin of the salmon contributing to each fishery. This applies not only to coastal and distant water fisheries, which are known to exploit significant numbers of salmon from more than one river stock, but also to estuary fisheries which may also exploit fish from neighbouring stocks. Various initiatives have been undertaken to obtain this information including the following:

- The continent of origin of salmon caught at West Greenland has been estimated for a number of years using scale analysis and genetic techniques, and these results are used in developing catch options for the fishery.

- With the development of improved genetic techniques a number of FARs, including those for Finland, UK (Scotland), UK (England and Wales) and the US, indicate that genetic

analyses are being used to establish a baseline for identifying the river or region of origin of salmon to inform management. The Review Group noted that the development of such genetic baselines is also an important element of the SALSEA research programme.

By-catch

The Agreement on Adoption of a Precautionary Approach states that fisheries which could result in a by-catch of salmon should be subject to cautious conservation and management measures. Obtaining such information is an additional challenge. A number of FARs refer to the possible by-catch of salmon in fisheries for other species and efforts to estimate them.

For example:

- The FARs for several jurisdictions (Iceland, UK (Northern Ireland, UK (Scotland)) refer to the potential by-catch of salmon post-smolts in pelagic mackerel and herring fisheries in the North-East Atlantic. The Review Group notes that the Russian Federation has made particular efforts to try to quantify this by-catch through an observer programme on its pelagic vessels.

- The Icelandic FAR refers to a questionnaire survey conducted in 2004 and 2005 to assess the by-catch of salmon by the Icelandic commercial fishing fleet. The results suggest a by-catch of approximately 5,100 (3,165-7,055) salmon each year, mainly by large pelagic boats, but no information on the origin of the fish is available. Reference is also made to potential by-catch of salmon in coastal net fisheries for Arctic char, and the Review Group is aware that measures have been introduced in order to minimise this risk.

- The Norwegian FAR indicates that test fishing using mackerel gill nets, which are considered to be the most likely source of by-catch, has been undertaken and the information incorporated in estimates of unreported catch.

- The US FAR indicates that it is a condition of having a federal commercial fishing permit that any by-catch of salmon is reported and additionally observers are placed on some commercial fishing vessels to provide a third party estimate of by-catch. Commercial gillnet fisheries for American shad and recreational shad, striped bass, and trout fisheries are monitored for incidental salmon catch.

3 Powers to control exploitation

Best practice would ensure that managers have sufficient powers not only to control harvests but to respond with sufficient speed to changes in individual stock status and to adjust harvest levels or fishing effort in-season to take account of actual run sizes or environmental conditions (e.g. low flows and high water temperatures). It is clear that all jurisdictions have powers to control fishing effort and/or harvests in their fisheries although this may be limited to some extent by the ownership of the fisheries or other factors. Several FARs describe approaches and challenges:

- The FARs for UK (Northern Ireland - River Foyle) and for Canada indicate that they have powers to adjust management measures within the fishing seasons to take account of stock size and/or environmental conditions. For the River Foyle, if at certain dates during

the season target numbers of fish have not been achieved then closures of the angling and/or commercial fisheries take place.

- The Canadian FAR indicates that a large number of rivers in Quebec are subject to in-season assessments and based on estimates of returns to date, retention of large salmon may be prohibited for the remainder of the season.

- Some FARs (e.g. UK (Scotland) and UK (England and Wales)) report progress towards being able to apply management measures more rapidly than in the past. Thus, in the UK (Scotland) the Ministers have recently acquired powers to make Salmon Conservation Regulations where necessary to protect stocks from any form of exploitation.

- A particular challenge was identified in the FAR for Finland where because the two salmon rivers both border Norway the management of their fisheries (other than tourist angling) is largely through bilateral agreements that do not facilitate rapid changes to the management regime in response to changes in abundance.

4 Reference points (conservation limits or other measures of abundance and diversity)

The Agreement on Adoption of a Precautionary Approach states that CLs and management targets (MTs) should be set for each river and combined as appropriate for the management of different stock groupings defined by managers. The NASCO Decision Structure further indicates that where these reference points have not been established alternative measures of abundance may be used.

Conservation Limits

The Agreement on Adoption of a Precautionary Approach proposes that jurisdictions should develop CLs based on the spawning stock that will achieve maximum sustainable yield, ideally for each sea-age component of their stocks. The Best Practice Guidance indicates that CLs should ideally be established on the basis of river specific information, but in the absence of such data they should be based on information derived from other rivers.

In view of the substantial costs involved, no jurisdictions have been able to set CLs using river specific data except for a small minority of river stocks. However, a variety of approaches have been used by jurisdictions to transfer information from closely monitored systems to other rivers including the following:

- In Canada and the US, standard egg deposition rates expected to maximise freshwater production are applied across a large number of rivers (e.g. 240 eggs $100m^{-2}$ of fluvial habitat in the US, Canadian Maritime Provinces and in Newfoundland; 190 eggs 100 m^{-2} of fluvial habitat in Labrador; and 1.67 eggs per unit of production area in Quebec with the unit of production varying with the type of river and latitude).

- In Norway, modelling of stock-recruitment relationships is being used to set area specific CLs with either 1, 2, 4 or 6 eggs m^{-2} being used to reflect the productivity of the river. These deposition rates are then scaled up using wetted area derived from digital maps.

- In the FARs for UK (Northern Ireland) and UK (England and Wales) it is stated that stock recruitment data from the River Bush, which has been monitored for over 30 years, has been used to establish CLs on other rivers. The model used in UK (England and Wales) adjusts the production level according to quantity and quality of the juvenile habitat.

- In the Irish FAR, it is reported that stock and recruitment data from thirteen monitored salmon rivers located in the North-East Atlantic have been used to establish CLs for all Irish rivers using available information on the size of the river (usable habitat or wetted area) and its latitude.

Management Targets

Both the Agreement on Adoption of a Precautionary Approach and the NASCO Decision Structure indicate that MTs should also be established to assist fishery managers such that there is a low risk of stocks falling below their CLs.

Several FARs indicate that management targets have been established. For example:

- The UK (England and Wales) FAR indicates that the management objective for each river is that the stock should be meeting or exceeding its CL in at least four of the last five years. MTs have been established based on the variability of historic egg deposition data, and these values are listed in their FAR.

- The FAR for UK (Northern Ireland) indicates that MTs are operated on the River Foyle on the basis that if at certain dates target numbers of fish have not been achieved then closures of the angling and/or commercial fisheries take place.

- The Russian Federation FAR states that MTs are set at a level higher than the CLs and used as reference points for managing the fisheries.

While some other jurisdictions have not set formal MTs they manage their fisheries to ensure a low probability of stock levels falling below their CLs. For example, the FAR for Norway indicates that the objective is that the CL should be exceeded in at least three out of four years and the Irish FAR states that catch options are set on the basis of providing a 75% probability that the CL will be met.

Alternative reference points

Where CLs have not been established, the Best Practice Guidance indicates that alternative measures should be used as reference points and should be shown to be effective in defining adequate stock levels. Several jurisdictions are still in the process of establishing CLs for their stocks and are, therefore, using alternative measures for some or all rivers. In all cases where information was provided in the FAR, these are based upon catch data. However the main challenge in using these alternative measures is defining the reference levels at which management action is required, and at present there are no examples of clearly defined levels being used to trigger management action.

In the US FAR, it is stated that two additional measures are being established as reference points in addition to CLs; these are the replacement rate for all populations listed under the Endangered Species Act and quantitative recovery criteria. Draft recovery criteria have been

developed and propose that a census population size of 500 should represent the upper threshold at which each of three Salmon Recovery Habitat Units would be considered to be threatened. To be considered recovered, each of the three units would have to have at least a 50% probability of remaining above 500 adults over the following 15 years and have trended towards recovery for the last 10 years.

In the FAR for Denmark, while no CLs or MTs have been set, it is stated that a reference point of 1,000 spawners is being used in the four rivers with wild Atlantic salmon and is based on genetic conservation considerations.

5 Achievement of the reference points or other measures of abundance and diversity

The Best Practice Guidance indicates that it should be normal practice to evaluate every year the extent to which stock levels have met the management objectives with regard to stock abundance and diversity. Assessments of stock abundance and diversity based on catches involve considerable uncertainty, so best practice would involve the use of other sources of information to confirm the status of stocks (e.g. juvenile surveys, counter and trap data) and the management measures introduced should take into account the uncertainties in the data used. Such assessments should normally be undertaken annually. In accordance with NASCO's Guidelines on the Use of Stock Rebuilding Programmes in the Context of the Precautionary Management of Salmon Stocks, CNL(04)55, the duration and degree of any failure to achieve the reference point, and the trend in stock abundance, should be considered in determining the need for, and nature of, management measures. Where there is insufficient information on any failure to achieve the reference point, further research should be undertaken to understand the reason for the failure. In addition, stock levels should ideally also be forecast for one or more years ahead to provide some predictions of future expected achievement of management objectives under current (or modified) management measures. For example:

- For the West Greenland fishery stock abundance is forecast for both North American and Southern European stocks and provides the basis for establishing regulatory measures.

Those jurisdictions that have established CLs generally estimate achievement of these levels on an annual basis. This is usually undertaken using catch statistics and estimates of exploitation rates, although these may be supported by the use of direct counts, mark recapture experiments and other techniques. For example:

- The Canadian FAR provides a particularly comprehensive example of how data from a range of sources is used. Assessments are conducted for a limited number of rivers as an indicator of patterns within that region. Estimates of returns are obtained using various techniques including total counts at fishways and counting fences, mark recapture experiments, visual counts made by snorkelling or from boats or the shore, and angling catches and estimated exploitation rates. Indices of freshwater production are available from a subset of assessed rivers based on smolt counts for 11 rivers and data on juvenile abundance.

- The FAR for UK (England and Wales) indicates that the performance of salmon stocks is assessed using a compliance scheme that summarises the performance of the stock over

the last 10 years and forecasts the probability of future compliance with the management objectives. This methodology allows uncertainty in the performance of the stock to be taken into account. For, example, egg deposition may be consistently above the CL but the status of the stock may be uncertain as reflected in wide confidence intervals around the estimates.

6 Other factors influencing the stock(s)

NASCO's Guidelines on the Use of Stock Rebuilding Programmes in the Context of the Precautionary Management of Salmon Stocks, CNL(04)55, state that while the short-term response to a stock failing to exceed its conservation limit may be to reduce or eliminate exploitation, there will generally be a need to develop a programme to evaluate and address the causes of the stock decline. In more serious situations, there may be a need for a comprehensive programme of research and management, involving a wide range of management actions undertaken by a number of user groups. Similarly, the NASCO Decision Structure requires that consideration be given to whether the stocks are threatened by factors other than fisheries (e.g. habitat degradation, diseases and parasites).

Most FARs failed to address this issue in any detail, possibly because it was felt that this had been addressed in the Implementation Plans or would be addressed in subsequent FARs dealing with habitat and aquaculture and related activities. However, the Norwegian FAR describes a detailed inventory of other factors affecting their stocks. This inventory categorises all rivers on the basis of the status of their salmon stocks and identifies all adverse human impacts affecting the stock. Thus, the impact of factors such as hydro-power development, other habitat degradation, pollution, fish diseases, sea lice, *Gyrodactylus salaris* and acidification are considered. A useful summary of the number of rivers in each category and the threats affecting them is included in the Norwegian FAR.

The Review Group recommends that for future reporting on fishery management FARs a brief overview of factors other than the fisheries which may be influencing the stocks be provided.

7 Management actions to control harvest

The Best Practice Guidance suggests that in managing salmon fisheries, priority should be given to conserving the productive capacity of all individual river stocks. Furthermore managers should demonstrate that they are being 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. For example:

- The FAR for Ireland indicates that harvests can only occur in rivers where the stock is exceeding its CL. Separate harvest options for 1SW and MSW salmon are provided for 17 rivers where the numbers of MSW salmon are high enough to warrant separate management advice or where there is a clearly defined and separate spring salmon fishery. This FAR also provides an example of an approach to handling data-poor situations. In small Irish rivers where there is an absence of information on the status of the spawning stocks, it is assumed that they are only achieving 33% of their CL and no harvest will be permitted in these rivers until more information is available.

Ideally, forecasts of stock abundance for all stocks contributing to the fishery would be used to determine the harvestable surplus or appropriate level of fishing effort, with in-season adjustments being made to reflect actual returns. Where such forecasts are not available, harvest levels could be based on historical data to assess if there is likely to be a harvestable surplus. On the basis of information provided in the FARs, the only fishery for which management measures are set on the basis of forecasts of abundance is the West Greenland fishery. All other jurisdictions base management decisions on historical data. Examples of in-season management of fisheries are provided in Section 3.

8 Mixed stock fisheries (MSFs)

NASCO has defined MSFs as fisheries exploiting a significant number of salmon from two or more river stocks. ICES has advised that MSFs operate predominantly in coastal areas and can present particular threats to stock status. NASCO does not, and could not under its Convention, have a policy of prohibiting such fisheries but has sought to ensure that management measures for the distant-water MSFs protect the contributing stock complexes. Great sacrifices have been made by Denmark (in respect of the Faroe Islands and Greenland) and by some other Parties, in aligning the management of their salmon fisheries with the scientific advice. However, as part of the 'Next Steps' process the Council seeks to ensure that further action is taken to improve the fairness and balance in the management of distant-water and homewater fisheries.

Rational management of MSFs requires knowledge of the status of each stock that contributes to the fishery and where such fisheries operate managers should have a clear policy for their management that takes account of the additional risks associated with them. Management actions for homewater MSFs should aim to protect the weakest of the individual contributing river stocks.

MSFs do not occur in Finland, Ireland, Iceland, or the US and substantial steps have been taken to reduce or eliminate them in other jurisdictions. Several jurisdictions have a clear policy to significantly restrict or prohibit the operation of coastal MSFs for salmon. The following are examples of approaches being used to manage MSFs:

- The Irish FAR indicates that the MSF, comprising principally drift nets and coastal draft nets, was closed in 2007 when the management regime was aligned with the scientific advice. A hardship scheme was introduced for fishermen affected by the closure.

- Some jurisdictions (e.g. UK (England and Wales) and UK (Northern Ireland)) have a clear policy to phase-out MSFs although no timescale for this is given. In the FAR for UK (Northern Ireland), it is reported that 90% of the licensed commercial fishing gear in the Fisheries Conservancy Board (FCB) area was removed through a voluntary buy-out scheme and the policy is for a voluntary buy-out of the remaining commercial nets. In the Loughs Agency area salmon fishing seaward of Lough Foyle has been prohibited. The FAR for UK (England and Wales) states that seven of the ten coastal MSFs have been successfully phased-out. The remaining MSFs operate in areas where information exists on the exploited stocks and, while the phase-outs will continue, management measures for these fisheries will aim to ensure that the exploited stocks meet their CLs or that this objective can be achieved in a reasonable timescale.

- In Canada all commercial salmon fisheries have been closed but in coastal waters in Labrador there are aboriginal food fisheries for Atlantic salmon and a food fishery for residents of Labrador in which a by-catch of salmon in nets set for trout and char is permitted. The Canadian FAR states that additional management measures were introduced in 2006 to reduce the catch of large salmon (including 2SW fish) in coastal areas of Labrador and the FAR reports that this appears to have been successful.

- The Russian Federation's FAR indicates that as the MSF may have adverse effects on the status of individual river stocks, the quotas for the coastal commercial fishery in the White Sea is being gradually reduced. Thus, in the Murmansk region the quota has been reduced from 51 tonnes in 2005 to approximately 35 tonnes in 2007. In the Archangelsk region the reduction has been from 44 tonnes in 2005 to approximately 17 tonnes in 2007.

- The FAR for Norway indicates that guidelines for MSFs have been developed in relation to the fishery regulations for 2008 – 2012. These guidelines state that fishing in coastal regions should only be permitted when the fisheries have little impact on stocks that are not at full reproductive capacity, and the status of the stocks in nearby regions, counties and countries should be taken into account. In fiords, the fisheries should be reduced when one or more of the stocks in the fiord is not at full reproductive capacity.

- The FAR for UK (Scotland) indicates that a strategy for MSFs is being developed under the Strategic Framework for Scottish Freshwater Fisheries and that Scottish Ministers will support the policy of purchasing MSFs on a willing buyer/willing seller basis as a means of reducing exploitation and improving fishery management.

9 Socio-economic factors

The Agreement on Adoption of a Precautionary Approach indicates that priority should be given to conserving the productive capacity of the resource by maintaining all salmon stocks above their CLs. However, the same Agreement also indicates that management measures should take account of socio-economic factors. The stated purpose of NASCO's Guidelines for Incorporating Social and Economic Factors in Decisions under the Precautionary Approach, CNL(04)57, is to support and inform rather than providing a mechanism for decision-making. Thus, the NASCO Guidelines and Agreements do not make it clear how fishery management decisions are to be taken when there are conflicting socio-economic and conservation issues to be considered. The Best Practice Guidance proposes that conservation of the salmon resource should take precedence, and transparent policies and processes should be in place to take account of socio-economic factors in making management decisions and for consulting stakeholders.

While many FARs referred to the considerable socio-economic values of the Atlantic salmon (e.g. in Scotland the capital value of recreational fisheries has been estimated at £550 million and annual angler expenditure at £61.7 million) most failed to provide a clear indication of how socio-economic factors are incorporated into decisions, and in particular how decisions are taken to permit fishing on stocks when they are below their reference points.
All jurisdictions have to make decisions about the allocation of any harvestable surplus (or fishing opportunities) between different user groups and this may involve socio-economic considerations. For example, the FAR for Canada indicates that Aboriginal groups have priority to fish for food, social and ceremonial purposes after conservation requirements have

been met. Similarly, the FAR for the Russian Federation indicates that priority is given to allocating a quota to the indigenous people rather than to scientific, recreational or commercial fisheries.

When stocks are below their reference levels, different approaches are taken to handling the interplay between socio-economic considerations and conservation issues. For example:

- The Irish FAR states that under the new management regime, there is no consideration of socio-economic factors in the decision-making process if there is no harvestable surplus. However, a hardship fund was established to support those affected by the change in management regime.

- The Canadian FAR indicates that in some areas, aboriginal and recreational fisheries are allowed on stocks that are below the conservation levels in order to maintain socio-economic benefits. In these cases, consideration is given to the overall size of the river, the size of the fisheries relative to the size of the resource, and the ability to manage the fisheries in an orderly manner.

- The FAR for UK (England and Wales) indicates that consideration is given to whether a proposed measure will have an unreasonable effect on someone's livelihood (e.g. net fishing) or the value of their property (e.g. fishing rights) relative to the conservation considerations. Such considerations may mean that it is necessary to reduce the full impact of a conservation measure, for example, by postponing implementation, or planning the recovery of the stock over a longer period.

- In Greenland an internal-use fishery has been allowed to operate in years when there is no allocated quota because of the dependency of the communities on fishing and in order to maintain a time-series of biological data to support the provision of catch options.

For future reporting, the Review Group recommends that an explanation be provided of how socio-economic factors are taken into account in decisions to permit fishing on stocks when they are below their reference points.

10 Effectiveness of management measures

The Agreement on Adoption of a Precautionary Approach requires the assessment of the effectiveness of management actions in all salmon fisheries. The Best Practice Guidance proposes that the expected extent of the effects of management actions and the expected timescale in which they will occur should be determined so as to facilitate assessment of the effectiveness of the measures. While many of the FARs provided information on routine stock monitoring programmes, they generally failed to describe programmes to assess the effectiveness of individual management measures. Examples where more information was provided include:

- The Irish FAR describes an assessment of the effect of the closure of the drift net fishery on returns to rivers where counts can be made. This assessment showed that the majority of rivers had increased escapement in 2008, although some of these increases were modest. However, many rivers showed considerable increases which allowed them to

exceed their CL if this was not already the case. Some rivers in the UK (Northern Ireland) also clearly benefited from the closure of the Irish MSF.

- The FAR for UK (England and Wales) describes an assessment of the effectiveness of the measures restricting fishing effort introduced to protect multi-sea winter salmon (MSW) in the early part of the year when they comprise the majority of the catch. The analysis showed that for the majority of rivers there was no significant change in the proportion or abundance of MSW salmon suggesting that the diversity (ratio of 1SW:MSW) has remained relatively constant.

The Review Group recommends that for future reporting, it would be useful if FARs could describe programmes to assess the effectiveness of their management measures.

Conclusions

This overview has highlighted the different approaches that are being used by jurisdictions in the management of salmon fisheries. These differences are to be expected given the different ownership of the fisheries, the nature of the fisheries and the extent of the resource. It is clear that considerable progress is being made in incorporating the internationally agreed principles in NASCO's various agreements, and this process should increase the fairness and balance in managing distant-water and homewater fisheries. Nonetheless, it is clear that there are some common management challenges, and the purpose of the 'Next Steps' review is to share information and highlight examples of best practice. In order to facilitate improved information exchange the next time the Council focuses on management of salmon fisheries, the Group has made some recommendations on the information to be contained in the reports. The Best Practice Guidance developed by the Group, if adopted by the Council, should assist in the review of the information presented in future FARs and in the assessment of consistency of the measures described with NASCO's agreements.