Agenda Item 7.2
For Decision

Council

CNL(10)16

Report of the Meeting of the NASCO/North Atlantic Salmon Farming Industry Liaison Group

CNL(10)16

Report of the NASCO/North Atlantic Salmon Farming Industry Liaison Group

1. The NASCO/ North Atlantic Salmon Farming Industry Liaison Group was established to provide an international forum for liaison between the salmon farming industry and the relevant authorities responsible for the wild Atlantic salmon stocks and aquaculture on issues of mutual interest and to make recommendations for action. In 2001, the Liaison Group developed Guidelines on Containment of Farm Salmon and these form Annex 3 of the Williamsburg Resolution.

2. Last year, the Liaison Group had established a Task Force to develop best practice guidelines and standards to address the impacts of aquaculture on wild salmon stocks. This Task Force had considered that the Williamsburg Resolution remains valid but needs to be strengthened in its interpretation and application, particularly in terms of defined goals and assessment of outcomes. The basic principle is that salmon stocks in areas with salmon farming should be in as healthy a state as those in areas without salmon farming. The Task Force developed 'Guidance on Best Management Practices to Address Impacts of Sea Lice and Escaped Farmed Salmon on Wild Salmon Stocks', ATF(09)5. These Guidelines were adopted by both the International Salmon Farmers Association (ISFA) and NASCO. The Task Force has met again since last June and has developed an Explanation of Terms Used in the BMP Guidance. The Liaison Group considered that the Task Force has now completed its work.

3. At its meeting during 29 – 30 April, the Liaison Group received a report of the second meeting of its Task Force, considered matters arising from the Task Force report and reviewed the report of the Aquaculture, Introductions and Transfers and Transgenics Focus Area Review Group. The Council is asked to consider the Liaison Group's report and decide if it:

    (a) can adopt the Explanation of Terms Used in the BMP Guidance (as contained in Annex 3 of the report of the Task Force, AFT(09)16);
    (b) can adopt the minor changes proposed to the BMP Guidance to improve consistency (Annex 6 of SLG(10)8);
    (c) can agree to the proposal that a Sub-Group of the Liaison Group be established to advise on reporting requirements in relation to the BMP Guidance;
    (d) wishes to respond to the comments from ISFA concerning the Focus Area Review Group's report (Annex 4 of SLG(10)8);
    (e) wishes to comment on any other aspect of the report of the Liaison Group meeting.

Secretary
Edinburgh
18 May 2010

SLG(10)8

Report of the Meeting of North Atlantic salmon farming industry and NASCO Liaison Group

Fishmongers Hall, London Bridge, London, UK
29 April 2010

1. Opening of the Meeting

1.1 The Chairman of the Liaison Group, Mr Sebastian Belle (ISFA), opened the meeting and welcomed participants to London. He thanked the NASCO Secretariat for the arrangements made for the meeting and the Worshipful Company of Fishmongers for allowing the Liaison Group to meet in its prestigious and historic hall.

1.2 The Secretary of NASCO, Dr Malcolm Windsor, indicated that Mr Andrew Wallace, a member of the Liaison Group's Task Force, was unable to participate in the meeting and had requested that Mr Paul Knight, who he had briefed on all the agenda items, be allowed to attend the second day of the meeting in his absence. The Liaison Group agreed to this request.

1.3 A list of participants is contained in Annex 1.

2. Appointment of a Rapporteur

2.1 Under the Liaison Group's Constitution, the posts of Chairman and Rapporteur are held alternately by representatives of NASCO and ISFA. Dr Peter Hutchinson (NASCO) was appointed Rapporteur for the meeting.

3. Adoption of the Agenda

3.1 The Liaison Group adopted its agenda, SLG(10)6 (Annex 2)

4. Report of the Task Force

4.1 In 2009, a Task Force had been established, comprising representatives of ISFA, NASCO and NASCO's accredited NGOs, with the following Terms of Reference:

Taking account of the best practice and measures taken in member countries and those developed by international and other organizations to address the impacts of aquaculture on the wild salmon stocks:

- Identify a series of best practice guidelines and standards to address the impacts of aquaculture on wild salmon stocks;
- Identify knowledge gaps and research requirements to address them;
- Consider if, and how, impact targets can be identified.

4.2 The Task Force, was Co-Chaired by Dr John Webster and Ms Mary Colligan, and had held two meetings during 2009. A report of the first meeting had been presented at the 2009 Liaison Group and NASCO meetings. At its first meeting, the Task Force had noted that while the Williamsburg Resolution remains valid it needs to be strengthened in its interpretation and application, particularly in terms of defined goals and assessment of outcomes. The Task Force had concluded that it was neither possible, nor desirable, to construct detailed international Codes of Practice which would cover all situations in which the Atlantic salmon is farmed, but rather it had developed Guidance on Best Management Practices to Address Impacts of Sea Lice and Escaped Farmed Salmon on Wild Salmon Stocks, SLG(09)5. The basic principle of this BMP guidance is that salmon stocks in areas with salmon farming should be in as healthy a state as those in areas without salmon farming. This BMP Guidance is intended to assist NASCO Parties and jurisdictions in framing the management of aquaculture, in cooperation with their industries, in developing future NASCO Implementation Plans and in preparing their Focus Area Reports (FARs) for the 2010 review and subsequently. The BMP Guidance had been adopted by both NASCO and ISFA.

4.3 A second meeting of the Task Force had been held in Edinburgh during 19 – 20 November 2009. The Co-Chair, Ms Mary Colligan, introduced the report of this meeting, ATF(09)16 (Annex 3). She indicated that at this meeting the Task Force had developed Explanations of Terms Used in the BMP Guidance. Where terms used in the BMP Guidance were already defined in the Williamsburg Resolution, these definitions had been included unchanged. The Task Force had also discussed the use of sterile salmon in farming, the extent and consequences of hybridization between wild and farmed salmon, exchange of information on research relating to impacts of salmon farming on the wild stocks, arrangements for reporting on progress in applying the BMP Guidance, site selection and relocation criteria, and the possible development of Decision Trees to assist jurisdictions in applying the BMP Guidance. It was agreed that these issues should be considered by the Liaison Group in the light of information presented in the Focus Area Reports (FARs). Matters arising from the second Task Force meeting are addressed under agenda item 6 below.

4.4 The Liaison Group agreed the Explanation of Terms used in the BMP Guidance ATF(09)15 (contained in Annex 3 of ATF(09)16) and agreed that the Task Force had now completed the tasks assigned to it. The Chairman thanked Ms Colligan for her presentation and congratulated the Task Force on its work.

5. Draft Report of the Aquaculture and Related Activities Focus Area Review Group

5.1 Following NASCO's 'Next Steps' review, it was agreed that each jurisdiction should develop an Implementation Plan for meeting the objectives of NASCO's agreements and report on the actions taken to implement these agreements. This reporting is through a brief annual report summarising the actions taken over the last year under the Implementation Plans and detailed Focus Area Reports (FARs) on one of three topics on an approximately three year cycle. The focus area topics are: management of fisheries; habitat protection, restoration and enhancement; and aquaculture, introductions and transfers and transgenics. The FARs are reviewed by *Ad Hoc*

Review Groups comprising four representatives of NASCO's Parties and two representatives of NASCO's accredited NGOs. The Review Groups review and analyse the FARs, identify common challenges and approaches to address them, advise where additional actions may be needed to ensure implementation of NASCO's agreements and compile recommended best practice. In 2008/2009 the topic was the management of salmon fisheries and in 2009/2010 it is habitat protection, restoration and enhancement. Following the fisheries management review, guidelines had been developed to: assist the jurisdictions in making further progress in implementing NASCO's agreements and guidelines; provide a basis for, and an exchange of information on, more consistent approaches to the management of fisheries around the North Atlantic; and assist jurisdictions in the preparation of future Focus Area Reports

5.2 The third focus area topic is aquaculture, introductions and transfers and transgenics. The Review Group had met in February 2010 and its draft report, CNL(10)12, was introduced by the Coordinator, Dr Malcolm Windsor, who described the background and the Group's working methods and one of the reviewers, Ms Heidi Hansen (Norway), who summarised the Group's main findings. Mr Poupard presented the NGO statements from the Review Group's report. The Review Group had been asked to: review and analyse the FARs, identifying common challenges and management and scientific approaches to these challenges; compile recommended best practice; and develop recommendations and/or feedback on each FAR where additional actions may be helpful to ensure implementation of the commitments within the Williamsburg Resolution. There had been no need for the Group to make recommendations on best practice as the Task Force referred to in section 4 above had developed BMP Guidance, which had been incorporated into the Council's guidance on the structure and content of the FARs. The Review Group had assessed all the FARs submitted to it (13 in total) and provided recommendations concerning their consistency with NASCO's agreements. Its draft report will be presented to the Council at the NASCO Annual Meeting in June when all jurisdictions will have an opportunity to comment on it. However, the draft report was being made available to the Liaison Group first so as to allow the industry an opportunity to provide feedback to NASCO. The industry would also be able to comment further on the report at the NASCO Annual Meeting in June. Following the Annual Meeting, the Review Group will complete its work by reviewing any additional FARs submitted, by considering any additional input and by preparing an overview of approaches to address challenges as identified in the FARs. Its final report will be presented in 2011.

5.3 Overall, with regard to salmon farming, the Review Group had concluded that in spite of the wealth of regulations and measures demonstrated in the FARs relating to salmon farming, no jurisdiction was able to show that it had reached a situation where it had achieved the international goals. The Review Group's opinion was that the salmon farming industry is very successful but it is its scale and continuing growth that pose real challenges to addressing impacts on the wild stocks.

5.4 The Liaison Group discussed the review process and a number of views were expressed. There were concerns from the industry that they had not been fully involved in the process. While some jurisdictions had involved the industry in the development of their FARs, not all jurisdictions had done so. The Liaison Group

recognised that this was the first FAR dealing with aquaculture and it had been something of a learning process but the development of subsequent FARs would be less onerous. However, it was stressed that it was a matter for each jurisdiction to decide how best to involve stakeholders and for the stakeholders to decide if they could commit resources to an international cooperative process. The aim is to learn from each other and thereby improve approaches to address impacts from aquaculture, introductions and transfers and transgenics.

5.5 The industry also indicated that they would have preferred to be represented on the Review Group but, as this had not been the case, sought clarification on the process by which it would be able to provide feedback on the Review Group's draft report. It was confirmed that the Council of NASCO had agreed that the draft report be made available to the Liaison Group, before it had been considered by the Council, so as to allow for feedback from the industry. This feedback could either be documented in the report of the Liaison Group and, if the industry needed additional time, it could submit comments separately prior to the Annual Meeting and these would be tabled as a Council paper. There would be a further opportunity to comment during a Special Session at the Annual Meeting which ISFA has been invited to participate in. This feedback from the industry, together with any from the jurisdictions, would be made available to the Review Group before it completes its work. NASCO, therefore, felt that it had gone to great lengths to facilitate feedback from the industry; more so than for the earlier reviews. The view was expressed that it would have been desirable if there had been an opportunity to comment on the Review Group's assessments before the draft report was issued. While the Terms of Reference allow for the Review Group to raise issues or questions with the jurisdictions before developing its report, this had not been possible because of the lack of time between completing the reviews and the Liaison Group meeting. The Review Group had also stated that it felt that it was more transparent for any issues to be raised at the Special Session in June.

5.6 Clarification was sought concerning the review process itself. The view was expressed by the industry that the approach was not independent and that using only one initial reviewer could lead to bias. However, others indicated that the review was by NASCO itself, assessing progress in implementing its own agreements. The task was to compare the information presented in the FARs against NASCO's agreements. All the assessments of the FARs were based on two initial reviews which were then discussed by the Group and unanimous agreement was reached on all these reviews which had then been subject to a thorough consistency check. The rules adopted by the Review Groups do not require unanimity and in the case of the aquaculture review some statements developed by the NGOs had not been supported by some or all of the representatives from the jurisdictions. The industry representatives suggested that it would have been clearer if these statements had been annexed to the report as a minority report.

5.7 A number of concerns were expressed by the industry about the presentation of the Review Group's assessments. For example, it was felt that the general statements would be interpreted as applying to all the FARs and it was asserted that this is not the case and it is not clear which FARs it does apply to. Furthermore, clarification was sought as to whether it was appropriate for the Review Group to make statements such as that concerning regulation being more effective to voluntary measures to

protect the wild stocks without providing supporting evidence. Some industry representatives indicated that without such evidence it should have been made clear that it was only an opinion. Other members of the Liaison Group stated that it is consistent with the Terms of Reference that required the Review Group to make recommendations and/or provide feedback where additional actions may be helpful in ensuring implementation of the Williamsburg Resolution.

5.8 ISFA also expressed concern that the international objectives seek 100% containment and lice control and that the Review Group had assessed the FARs against those objectives without recognising that progress is being made. Subsequent Review Groups would probably always reach the conclusion that this objective had not been achieved. However, the NASCO process is not intended to judge if 100% containment has been achieved but whether sufficient evidence has been presented to demonstrate that progress towards the international goals is being made. The Review Group's assessments simply highlighted whether or not adequate information had been presented to allow assessment of progress towards the international goals and in most FARs this was not considered to be the case. The view was expressed that the format used for the development of FARs had limited the amount of information that could be presented to demonstrate progress. It was noted that NASCO will be reviewing the 'Next Steps' process in 2010/11 in terms of what it has delivered and improvements that could be made.

5.9 It was also noted that the Review Group had highlighted the increased abundance of sea lice in 2009 in some jurisdictions and the development of resistance to some treatments. The BMP Guidance highlights, as a factor facilitating implementation, access to a broad suite of therapeutants, immunostimulants and management tools. The industry would, therefore, welcome NASCO's support to ensure that the most effective treatment methods are available to the industry where these conform to environmental standards.

5.10 ISFA tabled a statement, SLG(10)7 (Annex 4), at the meeting providing initial comments on the Review Group's report and the process followed. Some government and NGO representatives indicated that they believed it contained misconceptions and incorrect interpretations of the role of the NGOs to NASCO and of the 'Next Steps' process. However, the Liaison Group did not review the ISFA statement.

6. Matters arising from the Task Force Meetings

(a) *Update on the Salmotrip project*

6.1 The Williamsburg Resolution identifies, as an area for research and pilot testing, the production of sterile fish. It recognises that the methodology and techniques for sterilisation are now well developed and that research should focus on developing strains of sterile fish which could perform at a level similar to current strains of fish used in farm production. At the 2005 Trondheim Workshop, 'Wild and Farmed Salmon – Working Together', a session had been held on the pros and cons of sterile salmon in farming. Information presented had indicated that the only approach currently available for the commercial-scale production of sterile salmon is the use of all-female triploids. The use of such sterile fish could contribute to addressing

concerns about genetic interactions between wild and farmed salmon because, in trials, many fewer triploid salmon returned to fresh water than diploid salmon. However, there are production problems for the industry and concerns about welfare issues and possible consumer resistance to triploids. The Workshop had suggested that this issue be further considered by the Liaison Group and by NASCO but until recently there had been no new research to inform the debate. At the Task Force's second meeting reference was made to an EU funded study, 'Salmotrip', into the feasibility of triploid salmon production, including consideration of the marketing aspects. The NASCO Secretariat was asked to obtain further details on this project through its contacts.

6.2 The Assistant Secretary introduced document SLG(10)4 (Annex 5) which provided further details on the project's aims based on information obtained from the project's website and through discussions with the project's coordinator, Dr Herve Migaud, University of Stirling, Scotland. He indicated that a number of publications arising from the project were currently under review and the intention is to hold a session at the European Aquaculture Society meeting in Porto, Portugal during 5 – 8 October 2010 to allow for presentation of some of the project's findings. The project's coordinator had indicated that the preliminary results of the trials to date suggest that the triploid strains had performed very well although the summer period ahead could be an important period based on previous experiences of rearing triploid salmon. Importantly, the project has funded a market perception analysis involving consumers in the UK, France and Germany.

6.3 The Liaison Group welcomed this new information on the project and while it was unlikely that the members of the Liaison Group would be attending the EAS meeting, it would welcome additional information on the project's findings. In particular, it would welcome clarification concerning ownership of the intellectual property rights of the projects deliverables. The Assistant Secretary agreed to continue to liaise with the project's coordinator in order to ensure that the Liaison Group continues to be updated on the results arising from the project which will conclude during 2010 including exploring the possibility of a report from the coordinator being made available to the Liaison Group at its next meeting

(b) *Research on the Consequences of Hybridization*

6.4 At its second meeting the Task Force had discussed the potentially serious consequences of hybridization between wild and farmed salmon and the findings from two separate experiments that had been conducted in Norway and Ireland into the relative performance, in a common riverine environment, of farmed and wild salmon and their hybrids. These studies had been reported at the Bergen Symposium in 2005 together with the results of some modelling studies on the consequences of hybridization (see ICES Journal of Marine Science volume 63 (7)). While the input data for the models had improved as a result of the recent experiments in Ireland and Norway (e.g. with regard to relative fitness estimates) reported at the Bergen Symposium, it was recognised that the models would need to be validated against observations in the field. The Task Force had noted that this topic is identified under the 'Williamsburg Resolution' as an area for further research and that jurisdictions should, therefore, highlight any ongoing relevant research in their FARs.

6.5 The Liaison Group agreed that the term hybridization was more normally used in relation to interbreeding between different species. The Liaison Group agreed that it was more appropriate to refer to interbreeding between farmed and wild salmon and this term is used in the rest of this report in preference to hybridization. The Liaison Group was informed that the Norwegian FAR presented the results of a modelling study that mapped changes in the composition of the spawning run of wild salmon as a result of interbreeding with escaped farmed salmon in the years 1995 and 2004, together with the predicted changes by 2100. In Norway, a program has been established to monitor gene flow from farmed salmon to wild salmon populations and uses genetic markers to assess the extent to which the genetic composition of wild salmon populations has been altered by escaped farmed salmon. The FAR for Northern Ireland presented the results of a study into the genetic impacts on the wild salmon population of the Glenarm River of a documented escape of farmed salmon from a nearby farm which demonstrated that escaped farmed salmon had undergone interbreeding with the wild population, resulting in a change in gene frequencies at some of the genes examined. Some of the genetic changes had persisted in the wild population. The FAR for Scotland indicates that studies are underway to develop genetic markers that are capable of distinguishing between wild and farmed salmon and their offspring.

6.6 The Liaison Group recognised the risks involved to the wild stocks from interbreeding with escaped farmed salmon which highlights the importance of further progress being made towards achievement of the international goal for containment. It was noted that there is a considerable volume of published literature on the occurrence and consequences of interbreeding between wild and farmed salmon including the SALGEN book (The Atlantic Salmon: Genetics, Conservation and Management, Edited by E. Verspoor, L. Stradmeyer and J. L. Nielsen, Blackwell Publishing, ISBN 978-1-4051-1582-7) and agreed that it needed to be informed of the results of any new studies on this topic.

(c) *Development of Standardised Categories of Escape Events*

6.7 In 2001, the Liaison Group had developed Guidelines on Containment of Farm Salmon which were incorporated into NASCO's Williamsburg Resolution. These Guidelines apply to both freshwater and marine environments. In accordance with the guidelines, each jurisdiction is requested to draw up a national action plan on containment (or regional plans) based on the guidelines. To assist the jurisdictions in reporting on progress with the implementation of its action plan on containment, a reporting format was agreed and has been used by jurisdictions, since 2002, to report information to the Liaison Group including information on the level and causes of escapes. At its second meeting, the Task Force had recommended that the Liaison Group should develop some standardised categories of causes of escape events. The Liaison Group discussed document, SLG(10)3, which contains draft categories of causes of escape events drawing on the elements contained in the Guidelines on Containment of Farm Salmon. The Liaison Group was advised that the Escapes Commission in Norway would be reporting shortly and that its report would include a categorisation of escape events. Similarly, some other jurisdictions have developed or are developing such categorisation. The Liaison Group, therefore, agreed that it

would be helpful if each jurisdiction provided details of the categories of escape events currently being used so that these could be considered at the next meeting of the Liaison Group with a view to further considering the need for standardised categories for use in reporting internationally.

(d) *Site Selection and Relocation Criteria*

6.8 At its second meeting the Task Force had briefly discussed site selection and relocation criteria for salmon farms. It was recognised that it did not have the required expertise and that this topic should be discussed further by the Liaison Group. The Liaison Group did not have time at its meeting for a consideration of this important topic and agreed that it should be included on the agenda for its next meeting. It was agreed that the Secretariat should be requested to collate a summary of information from the FARs on the site selection and approval process in each jurisdiction with salmon farming. This review would be circulated to the Liaison Group in advance of its next meeting, so as to allow an opportunity for jurisdictions and the industry to provide any additional information. The Liaison Group recognised that this matter is specific to each jurisdiction and it would, therefore, reconsider its role in relation to this issue in the light of the review from the Secretariat.

(e) *Amendments to the BMP Guidance*

6.9 The BMP Guidance, SLG(09)5, developed at the first meeting of the Task Force had been adopted by both NASCO and ISFA in 2009. However, at the second meeting of the Task Force some minor inconsistencies in the terminology used in this Guidance had been identified and it had been proposed that the BMP Guidance be amended accordingly. The inconsistencies concerned the terms 'escape', 'escaped salmon' and 'escape events' and had been detailed in document SLG(10)5. The Liaison Group agreed to these changes and adopted the revised BMP Guidance, SLG(09)5rev (Annex 6).

(f) *Possible Development of a Decision Tree to Assist in Applying the BMP Guidance*

6.10 At the second meeting of the Task Force, draft Decision Trees relating to sea lice and containment were reviewed. The Task Force agreed that it would be helpful to have a description of how the BMP Guidance is being applied by each jurisdiction in terms of both voluntary and regulatory measures and their effectiveness. However, it was felt that this information might be provided in the FARs although not necessarily in a Decision Tree format. The Task Force had recommended, therefore, that the Liaison Group review this issue at its next meeting in the light of the information provided in the FARs. However, there was not enough time for this issue to be considered by the Liaison Group but it was agreed that it would retain the item on its agenda for its next meeting. To facilitate the Liaison Group's work at its next meeting, it agreed that the Decision Trees tabled at the Task Force meeting, and contained in documents ATF(09)14, ATF(09)17 and ATF(09)18, should be made available as background papers for that meeting.

(g) *Arrangements for Reporting on the BMP Guidance*

6.11 The Task Force had recognised that monitoring of progress towards achievement of the international goals through reporting and tracking is a key element of the BMP Guidance but there is a need to avoid an excessive reporting burden. The Task Force had discussed whether there might be annual reporting to the Liaison Group under the BMP Guidance but agreed that this issue should be considered further by the Liaison Group in the light of information presented in the FARs. It had been noted that the effectiveness of reporting to NASCO may also be considered as part of a review of NASCO's 'Next Steps' process to be undertaken in 2010/2011.

6.12 The Liaison Group recognised the importance of being able to assess progress towards achievement of the international goals and noted that there is already a heavy reporting burden under the Implementation Plans in terms of both annual reports and triennial focus area reports. The triennial FARs to NASCO provided one mechanism for reporting in detail on the measures being taken under the BMP Guidance and the other elements of the Williamsburg Resolution. However, there might also be reporting to the Liaison Group to allow it to track progress towards the international goals, and other options. The need to carefully consider the scope of any additional reporting, so as to avoid duplication of reporting effort while ensuring that progress towards the international goals could be tracked, was recognised. The Liaison Group decided to set up a Sub-Group, Co-Chaired by Mary Colligan (US) and Jamey Smith (Canada), to review existing reporting requirements, identify areas of duplication and make recommendations for future reporting needs with reference to the BMP Guidance. Terms of Reference for this Sub-Group will be developed by the Co-Chairs and agreed by the Liaison Group by correspondence. The Sub-Group will comprise representation from the industry, jurisdictions and NGOs.

(i) *Communications*

6.13 Because of time constraints at its meeting, the Liaison Group had not been able to discuss the issue of communications but it agreed to review this matter at its next meeting. The Task Force had recommended that the BMP Guidance and the Explanation of Terms used in the BMP Guidance be printed in booklet form in the same format as the Williamsburg Resolution and widely circulated by ISFA and NASCO. The Liaison Group agreed that it would consider the need to publish this booklet once the FAR review process is completed.

7. Any Other business

7.1 There was no other business. The Liaison Group agreed that its next meeting should be held on 17 and 18 March 2011 in conjunction with the Boston Seafood Show. The ISFA and NASCO Secretariats would liaise on the arrangements for the meeting.

8. Report of the Meeting

8.1 The Liaison Group agreed a report of its meeting.

9. Close of the meeting

9.1 In closing the meeting, the Chairman thanked participants for their contributions and wished them a safe journey home.

Annex 1

Meeting of the ISFA-NASCO Liaison Group
29-30 April 2010

Court Room, Fishmongers' Hall,
London Bridge, London EC4R 9EL

List of Participants

Sebastian Belle (**Chairman)**	Maine Aquaculture Association, Hallowell, Maine, US
Mary Colligan	NOAA, NMFS, Gloucester, Massachusetts, US
Louise Donnelly	Scottish Government, Edinburgh, UK
Brian Dornan	Scottish Government, Edinburgh, UK
Barbara Franceschinis	DEFRA, London, UK
Paddy Gargan	Central Fisheries Board, Dublin, Ireland
Nell Halse	President of ISFA, Saint John, New Brunswick, Canada
Heidi Hansen	Directorate for Nature Management, Trondheim,Norway
Knut Hjelt	Norwegian Seafood Federation, Trondheim, Norway
Peter Hutchinson	NASCO, Edinburgh, UK
Paul Knight	Salmon and Trout Association, London, UK
Scott Landsburgh	Scottish Salmon Producers Organisation, Perth, UK
Pamela Parker	New Brunswick Salmon Grower's Association, Letang, New Brunswick, Canada
Ted Potter	CEFAS, Lowestoft, UK
Chris Poupard	Chairman of NASCO's NGOs, Truro, Cornwall, UK
Ruth Salmon	Canadian Aquaculture Industry Alliance, Ottawa, Ontario, Canada
Jamie Smith	Fisheries and Oceans Canada, Ottawa, Ontario, Canada
Phil Thomas	Scottish Salmon Producers Organisation, Perth, UK
Amy Williams	Fisheries and Oceans Canada, Ottawa, Ontario, Canada
Malcolm Windsor	NASCO, Edinburgh, UK

Annex 2

SLG(10)6

Meeting of the ISFA-NASCO Liaison Group

29-30 April 2010
Court Room, Fishmongers' Hall, London Bridge, London EC4R 9EL

Agenda

1. Opening of the Meeting
2. Appointment of a Rapporteur
3. Adoption of the Agenda
4. Report of the Task Force
5. Draft Report of the Aquaculture and Related Activities Focus Area Review Group
6. Matters Arising since the Task Force Meetings
   (a) update on the Salmotrip project
   (b) research on the consequences of hybridization
   (c) development of standardised categories of escape events
   (d) site selection and relocation criteria
   (e) amendments to BMP Guidance
   (f) possible development of a Decision Tree to assist in applying the BMP Guidance
   (g) arrangements for reporting on the BMP Guidance
   (h) research requirements relating to the management of the impacts of aquaculture on wild salmon stocks
   (i) communications
7. Any Other Business
8. Report of the Meeting
9. Close of the Meeting

Annex 3

ATF(09)16

Report of the Second Meeting of the ISFA-NASCO Task Force on Best Practice in Aquaculture to Address Impacts on Wild Salmon Stocks

19 – 20 November 2009
Scottish Government, Pentland House, 47 Robb's Loan, Edinburgh

1. **Opening of the Meeting**

1.1 The Co-Chairs, Ms Mary Colligan (USA) and Dr John Webster (UK), opened the meeting, welcomed participants to Edinburgh for the second meeting of the Task Force and thanked the Scottish Government for hosting the meeting. Ms Colligan referred to the progress made at the first meeting of the Task Force in developing Guidance on Best Management Practices to Address Impacts of Sea Lice and Escaped Farmed Salmon on Wild Salmon Stocks (hereinafter referred to as 'BMP Guidance') which had subsequently been adopted by both NASCO and ISFA. She highlighted the remaining tasks to be completed by the Task Force (see paragraph 3 and 4 below).

1.2 Ms Heather Jones welcomed members of the Task Force to Edinburgh on behalf of the Scottish Government which was delighted to host the meeting.

1.3 A list of participants is contained in Annex 1.

2. **Adoption of the Agenda**

2.1 The Task Force adopted its agenda, ATF(09)19 (Annex 2), after broadening agenda item 10 to cover 'Communications' rather than only 'Dissemination of Information on the Work of the Task Force'.

3. **Consideration of the Terms of Reference**

3.1 The TORs for the Task Force agreed by NASCO and ISFA are as follows:

Taking account of best practice and measures taken in member countries and those developed by international and other organizations to address the impacts of aquaculture on the wild salmon stocks:

- *Identify a series of best practice guidelines and standards to address the impacts of aquaculture on wild salmon stocks;*
- *Identify knowledge gaps and research requirements to address them;*
- *Consider if, and how, impact targets can be identified.*

3.2 At its first meeting the Task Force had developed the BMP Guidance, SLG(09)5, which was adopted by both ISFA (at the Liaison Group meeting in March) and by NASCO (at its Annual Meeting in June). Rather than further exploring the identification of impact targets, the Task Force had developed more quantitative

international goals contained in the BMP Guidance and approaches to assessing progress towards achievement of these goals. The Task Force had proposed to NASCO and ISFA that it might be useful to develop an explanation of some of the terminology used in the BMP Guidance and to develop a Decision Tree to assist NASCO jurisdictions and the salmon farming industry in applying the BMP Guidance and to understand its relationship to national codes and to the Williamsburg Resolution. These tasks together with further consideration of approaches to exchanging information on research relating to management of impacts of aquaculture were addressed at the second meeting. In addition, however, ISFA had proposed that consideration might also be given to how the findings of the Task Force might be more effectively communicated and Norway had raised two topics at the NASCO Annual Meeting for consideration by the Task Force (see paragraph 4.2 below).

4. Matters arising since the Boston Meeting

4.1 The BMP Guidance had been developed in order to assist NASCO's jurisdictions in framing the management of salmon aquaculture, in cooperation with their industries, in developing future NASCO Implementation Plans and in preparing their Focus Area Reports (FARs) for the 2010 review and subsequently. Following adoption of the BMP Guidance by NASCO, it had been agreed that the elements in this guidance should be incorporated into the format for preparation of the FARs previously agreed by NASCO. This had been done and the format, CNL40.970, which had been issued to all jurisdictions was made available to the Task Force. The Task Force was advised that the FARs are due to be submitted to the NASCO Secretariat by 31 December 2009, the Review Group will meet in February 2010 to conduct its assessments, and its interim report should be available in mid-April. The Liaison Group would then meet prior to the Twenty-Seventh Annual Meeting of NASCO to consider the Review Group's draft report.

4.2 At NASCO's 2009 Annual Meeting, Norway had requested that at its second meeting, the Task Force consider two important issues: the use of sterile salmon in aquaculture and the extent and impacts of hybridization between wild and farmed salmon. Both of these issues had been discussed at the 2005 Bergen Symposium and Liaison Group Trondheim Workshop but there is interest in any developments since that time.

4.3 With regard to the use of sterile salmon in aquaculture, the Task Force was advised of a three year project (2008 – 2011), 'Salmotrip', funded under the European Union's Seventh Framework Programme. The project involves partners in the United Kingdom, France and Norway with participants from both research institutions and a small number of salmon farming companies. The project has five main areas of focus including full-scale field trials and assessment of consumer perception and development of marketing strategies. The NASCO Secretariat had been contacted in relation to the market perception survey. The Task Force agreed that it would be useful to have a progress report on the project and the NASCO Secretariat agreed to seek this through its contacts on the project. The Task Force was advised that in the US there is considerable opposition to triploid farmed salmon among organic consumer organizations but it is not known if the study had included surveys in North America.

4.4 The Task Force was aware of two separate experiments conducted in Norway and Ireland into the relative performance in a common riverine environment of farmed and wild salmon and hybrids. These studies had been reported at the Bergen Symposium in 2005 together with the results of some modelling studies on the effects of hybridization which raise concerns about loss of genetic diversity. While the input data for the models had improved as a result of the common garden experiments (e.g. with regard to relative fitness estimates) it was recognised that the models should be validated against observations in the field.

4.5 The Task Force discussed the potentially serious consequences of hybridization between wild and farmed salmon and noted that both of the topics raised by Norway are referred to in the 'Williamsburg Resolution' under Research and Development and Data Collection. Jurisdictions should, therefore, highlight any ongoing relevant research in their FARs. It was recommended, therefore, that at its next meeting the Liaison Group review the information provided in the FARs, together with any additional information generated by the 'Salmotrip' project, and consider if further research on these topics may be needed.

5. Clarification of Terminology Used in the Guidance on Best Management Practices

5.1 The Task Force developed explanations of the terms used in the BMP Guidance to assist jurisdictions to interpret and implement the BMP Guidance so as to achieve the international goals, ATF(09)15 (Annex 3). The Task Force recommends that this should be appended to the BMP Guidance. A number of the terms have previously been defined in Annex 1 of the Williamsburg Resolution. These terms have been included unchanged in ATF(09)15.

5.2 The Task Force discussed site selection and relocation criteria for salmon farms and felt that it did not have the required expertise or time to consider these matters fully. The Task Force recommends that these issues be considered at the next meeting of the Liaison Group. The Task Force also recommends that the Liaison Group develop some standardised categories of causes of escape events. Furthermore, some minor inconsistencies in the terminology used in the BMP Guidance were noted (concerning the terms escape, escaped salmon and escape event) and the Task Force recommends that the BMP Guidance be amended as follows:

- Page 1 paragraph 2 line 3, delete 'escapes' and insert 'escaped salmon';
- Page 1 paragraph 2 line 14, delete 'escapes' and insert 'escaped salmon';
- Page 2 under Best Management Practices - Containment, 5th cell, replace 'escapes' with 'escape events';
- Page 2 under Reporting and Tracking - Containment, 1st cell, replace 'containment breach' with 'escape events' and replace 'escapes' with 'escape events';
- Page 3 under Factors Facilitating Implementation - Containment, 1st cell, replace 'escapes' with 'escaped salmon';
- Page 3 under Factors Facilitating Implementation - Containment, 5th cell, replace 'escapes' with 'escaped salmon';

- Page 3 under Factors Facilitating Implementation - Containment, 6th cell, replace 'escapes' with 'escaped salmon'.

6. Development of a Decision Tree to Assist in Applying the Guidance on Best Management Practices

6.1 The Task Force discussed the possible development of a Decision Tree or Trees to assist jurisdictions in applying the BMP Guidance. Draft Decision Trees relating to sea lice and containment were tabled, ATF(09)14. Documents were also tabled by Ireland, ATF(09)17 (Annex 4), and Norway, ATF(09)18 (Annex 5). The Task Force agreed that it would be helpful to have a description of how the BMP Guidance is being applied by each jurisdiction in terms of both the regulatory and voluntary measures and their effectiveness. This information should be provided in the FARs although it may not be in a Decision Tree format. The Task Force agreed that as the FARs should be in the final stages of development it would not be appropriate, at this late stage, to request that the jurisdictions provide the information in a Decision Tree format. However, the Task Force recommends that the Liaison Group review this issue at its next meeting in the light of the information provided in the FARs and decide if it wishes to seek a Decision Tree from each jurisdiction.

7. Arrangements for Reporting on Progress in Applying the Guidance on Best Management Practices

7.1 The Task Force discussed arrangements for reporting on the BMP Guidance. In 2010 there will be FARs on aquaculture and related activities but it is not anticipated that this will be the focus area again until 2013/2014 although, in the interim, there will be annual reporting to NASCO on Implementation Plans. It was recognised that assessment of progress towards achievement of the international goals through reporting and tracking is a key element of the BMP Guidance but that there is a need to avoid an excessive reporting burden. The Task Force discussed whether there might be annual reporting to the Liaison Group under the BMP Guidance, as is the case under the Guidelines on Containment of Farm Salmon for which a simple reporting format had been developed. However, the Task Force recommends that this issue be considered by the Liaison Group in the light of the information presented in the FARs. It was noted that NASCO will be undertaking a review of the strengths and weaknesses of the 'Next Steps' process in 2010/2011 and this review will include assessment of the adequacy of the focus area reporting.

8. Research Relating to Management of Impacts of Aquaculture on Wild Salmon Stocks

8.1 At its first meeting the Task Force had noted that its BMP Guidance contained some initial recommendations for further research and development and the Task Force had urged NASCO and its jurisdictions to explore, in collaboration with industry, opportunities for cooperative scientific work in support of the goals. The Task Force had also indicated that it would be valuable to have an exchange of information on ongoing and planned research relating to the management of impacts of aquaculture on the wild salmon stocks and that mechanisms for facilitating such an exchange be

further explored, e.g. through the 2010 FARs or at a subsequent meeting by the Liaison Group.

8.2 The Task Force recognised that NASCO's jurisdictions had been requested to provide information on ongoing research and data collection programmes in their FARs. The Task Force agreed that, in the first instance, the Liaison Group might review the extent of the information provided in these FARs and the overview of the information that will be prepared by the Review Group with a view to identifying gaps in knowledge, further research requirements and approaches to facilitate exchange of information on ongoing research programmes.

9. Arrangements for Next Liaison Group Meeting

9.1 It was agreed that the Task Force had now completed its Terms of Reference and would not need a further meeting since it is envisaged that the recommendations in this report would be taken forward through the Liaison Group. The Task Force recommends that the Liaison Group meet after the FAR Review Group has issued its draft report and prior to NASCO's Annual Meeting. It was suggested this meeting might be held in conjunction with the 2010 Brussels Seafood Show. In accordance with its Constitution, arrangements for the meeting would be developed through correspondence between the ISFA and NASCO Secretariats but in view of the significant agenda of work for the Group a period of one and a half days might be needed. The Task Force recommends that it would be valuable if all North Atlantic jurisdictions with salmon aquaculture were able to attend given the important topics to be covered. ISFA indicated that it was willing to consider broader involvement of the NGO community in the Liaison Group as at present only the Chairman of NASCO's accredited NGOs or his/her nominee may attend. The Task Force noted that while the salmon farming industry outside the North Atlantic is not represented in the Liaison Group they are involved in other ongoing initiatives such as the WWF Salmon Aquaculture Dialogue process and the outcome of the Liaison Group meetings are made available through the ISFA Secretariat.

10. Communications

10.1 The Task Force was advised that the NASCO website had recently been redeveloped and that the BMP Guidance had already been made available together with other information on the work of the Liaison Group. ISFA was in the process of redeveloping its website. The industry representatives indicated that they would welcome the opportunity to comment, through the ISFA Secretariat, on the elements of the NASCO website dealing with aquaculture related issues. The Task Force welcomed this suggestion and the NASCO Secretariat also offered to make information available for inclusion on the ISFA site. The Task Force recommends that the BMP Guidance and supporting documents, once agreed by NASCO and ISFA, might be printed in a high quality booklet format, and distributed widely.

11. **Any Other Business**

11.1 There was no other business. It was agreed that the Task Force had now completed its Terms of Reference and would not need a further meeting since the recommendations in this report would be taken forward through the Liaison Group.

11.2 The Task Force agreed that although the Explanation of Terms used in the BMP Guidance, ATF(09)15, has not been adopted by the Liaison Group they should be made available to NASCO's jurisdictions to assist them in developing their FARs.

12. **Report of the Meeting**

12.1 The Task Force agreed a report of its meeting.

13. **Close of the Meeting**

13.1 The Co-Chairs closed the meeting and thanked all participants for their contributions.

List of Participants

Sebastien Belle (US)

Mary Colligan (US) (Co-Chair)

Louise Donnelly (UK - Scotland)

Brian Dornan (UK - Scotland)

Paddy Gargan (Ireland)

Nell Halse (ISFA President)

Heidi Hansen (Norway)

Peter Hutchinson (NASCO Secretariat)

Heather Jones (UK - Scotland)

Ann Moffat (UK – Scotland)

Jamey Smith (Canada)

Andrew Wallace (NGO ASFB-UK)

John Webster (UK – Scotland) (Co-Chair)

Malcolm Windsor (NASCO Secretariat)

ATF(09)19

Agenda

1. Opening of the Meeting
2. Adoption of the Agenda
3. Consideration of the Terms of Reference
4. Matters Arising since the Boston Meeting
5. Clarification of Terminology Used in the Guidance on Best Management Practices
6. Development of a Decision Tree to Assist in Applying the Guidance on Best Management Practices
7. Arrangements for Reporting on Progress in Applying the Guidance on Best Management Practices
8. Research Relating to Management of Impacts of Aquaculture on Wild Salmon Stocks
9. Arrangements for Next Liaison Group Meeting
10. Communications
11. Any Other Business
12. Report of the Meeting
13. Close of the Meeting

ATF(09)15

Explanations of Terms Used in the Guidance on Best Management Practices to Address Impacts of Sea Lice and Escaped Farmed Salmon on Wild Salmon Stocks

The explanations of the terms that are provided in the table below have been developed to assist jurisdictions and the salmon farming industry to interpret and implement the BMP Guidance so as to achieve the international goals of: (1) effective sea lice management at all farms such that there is no increase in sea lice loads or lice-induced mortality of wild salmon attributable to farms; and (2) retention of 100% of farmed fish in all production. facilities.

Term used in BMP Guidance	Explanation of Term
Area Management	An area based management approach designed to facilitate cooperation at a local level in order to achieve shared objectives including the maintenance of healthy stocks of farmed fish and the protection of the wild salmon stocks. Area management applies to all salmon farmers in the shared area.
Adaptive management	Adjustment of management policies and actions in response to monitoring and scientific information.
Containment (physical)	Prevention of escapes of farmed salmon into the freshwater and marine environments.
Code of Containment	A set of guidelines and/or regulations applying to the salmon farming industry with the intention of preventing escapes of farmed salmon into the freshwater and marine environments. Codes of Containment can be voluntary or mandatory. Annex 3 of NASCO's Williamsburg Resolution contains Guidelines on Containment of Farm Salmon that require each jurisdiction to draw up a national action plan for implementing the Guidelines through codes of practice, regulations or both.
Escape event	A breach of containment resulting in the loss of farmed salmon to the wild.
Escaped salmon	The product of an escape event (see above).
Fallowing	A management approach that involves an effective break in the salmon farming production cycle that can be used together with other strategies to control parasites and diseases prior to introduction of new farmed stock.
Farmed salmon	The product of salmon farming (see below).
Fish lift trawl	A trawl designed to allow the live capture of wild salmonid smolts in a condition that allows *inter alia* studies of their disease and parasite status.
Immunostimulants	Substances that stimulate the immune system, i.e. an organism's processes that protect against disease by identifying and killing pathogens.
Integrated Pest Management (IPM)	An approach to pest and parasite control that uses a variety of complementary strategies with the goal of controlling these pests and parasites at an acceptable level on farmed fish.
Production facility	A facility used for rearing farmed salmon in either fresh or marine waters.

Risk-based approaches	Approaches to management and regulation that take into account the likelihood and magnitude of potential impacts from activities on wild salmonids, their habitat or farming.
Salmon farming	Production systems which involve the rearing of Atlantic salmon in captivity for the duration of their life-cycle until harvested.
Salmonid	All species and hybrids of the family Salmonidae.
Sea lice	Marine copepods that are ectoparasites of salmon. The two main species affecting farmed and wild salmon in the North Atlantic are *Lepeophtheirus salmonis* and *Caligus elongatus.*
Sentinel fish	Fish held in facilities as a tool to collect information on diseases and parasites in the vicinity of salmon farm installations.
Single year-class stocking	The rearing of only one year class (see below) of farmed salmon in a defined management area and period of time in order to facilitate fish health management. It requires that all fish in the defined management area are harvested and the area is fallowed before the next year class of farmed fish is stocked in that area.
Site appropriate technology	Equipment and structures that have been designed, constructed, installed and deployed to prevent escapes having proper regard to the known prevailing conditions at the site.
Technical standards	Specifications for the design, construction, installation and deployment of salmon farming equipment with the aim of preventing escapes of farmed fish.
Therapeutant	A substance used for treating, controlling or curing a disease, parasite or pathogen.
Treated smolts	Salmonid smolts that have been treated, e.g. against sea lice infection, so as to allow an assessment of their survival relative to untreated control groups released at the same time and location. A smolt is the stage in the life-cycle that is adapted to migrate to sea.
Trigger Level	A pre-defined level of sea lice on farmed fish that when attained or exceeded would require intervention by the farmer so as to achieve effective control of sea lice on farmed fish.
Verification of compliance	Monitoring, inspections, reporting and enforcement actions to ensure that all codes of practice, regulations and laws are being followed and environmental standards adhered to, increasingly involving independent (third party) auditing.
Wild salmon	Fish that have spent their entire life-cycle in the wild and originate from parents which were also spawned and continually lived in the wild.
Year class	All the fish stocked into a defined management area in a continuous twelve month period.

ATF(09)17

Recommendations on a New Role for Single Bay Management for Sea Lice Control in Ireland

Note:

The attached are recommendations for a new role for Single Bay Management (SBM) as a focus for management cells to manage sea lice control at a local and regional level reporting to the national implementation group. They were extracted from a Report by the Irish Department of Agriculture, Fisheries and Food entitled 'A Strategy for Improved Pest Control on Irish Salmon Farms', May 2008.

8. A New role for SBM (Single Bay Management) as a focus for management cells to manage sea lice control at a local and regional level reporting to the national implementation group.

Efforts should be intensified to revitalise the single bay management approach and make it central to national policy for sea lice management.

In this regard it is proposed that a new feature of the strategy to enhance the control of sealice infestations on Irish salmon farms should be the creation of an integrated mandatory “real time” management regime, which will vigorously deal with failures to control sealice infestations on a case-by-case basis. One of the perceived shortcomings of the current arrangements is that they are not sufficiently proactive in dealing with situations where, despite attempts to treat, the sealice infestation is not brought adequately under control.

The rationale behind this new initiative is to bring all of the relevant State expertise to bear on problem situations in real time, actively engaging the affected farmer and ensuring that a high priority is given to dealing with the infestation by all concerned.

The regime is designed to bring progressively tougher actions to bear on the infestation to ensure the highest possible level of compliance.

The structure and *modus operandi* of this new more vigorous regime are set out below:

- Following established best practise for environmental management, a bay *management cell* approach will be taken to the problem of controlling sealice infestations on individual farms, where despite attempts to treat, the level of infestation has not been brought under control.

Each bay where salmon farming takes place, will have a contingency *management cell* formed and available for immediate action. The cell shall consist of appropriate representation from the Marine Institute Sealice Monitoring Programme, Bord Iascaigh Mhara, an industry representative from the *Single Bay Management Group* for the bay and a veterinary surgeon of record.

- The cell will be convened by the Marine Institute Sealice Monitoring Programme representative when a *"notice to treat"* has been issued to a farmer in the bay, followed by an inspection which determines that either the *"notice to treat"* was not acted upon, or that the attempted treatment did not prove successful.

- The cell will take into account *inter alia* such factors as the time of the year relative to the so called *critical period* and the spatial location of the affected farm in determining the relative urgency of its responses and the speed at which it ratchets up its responses.

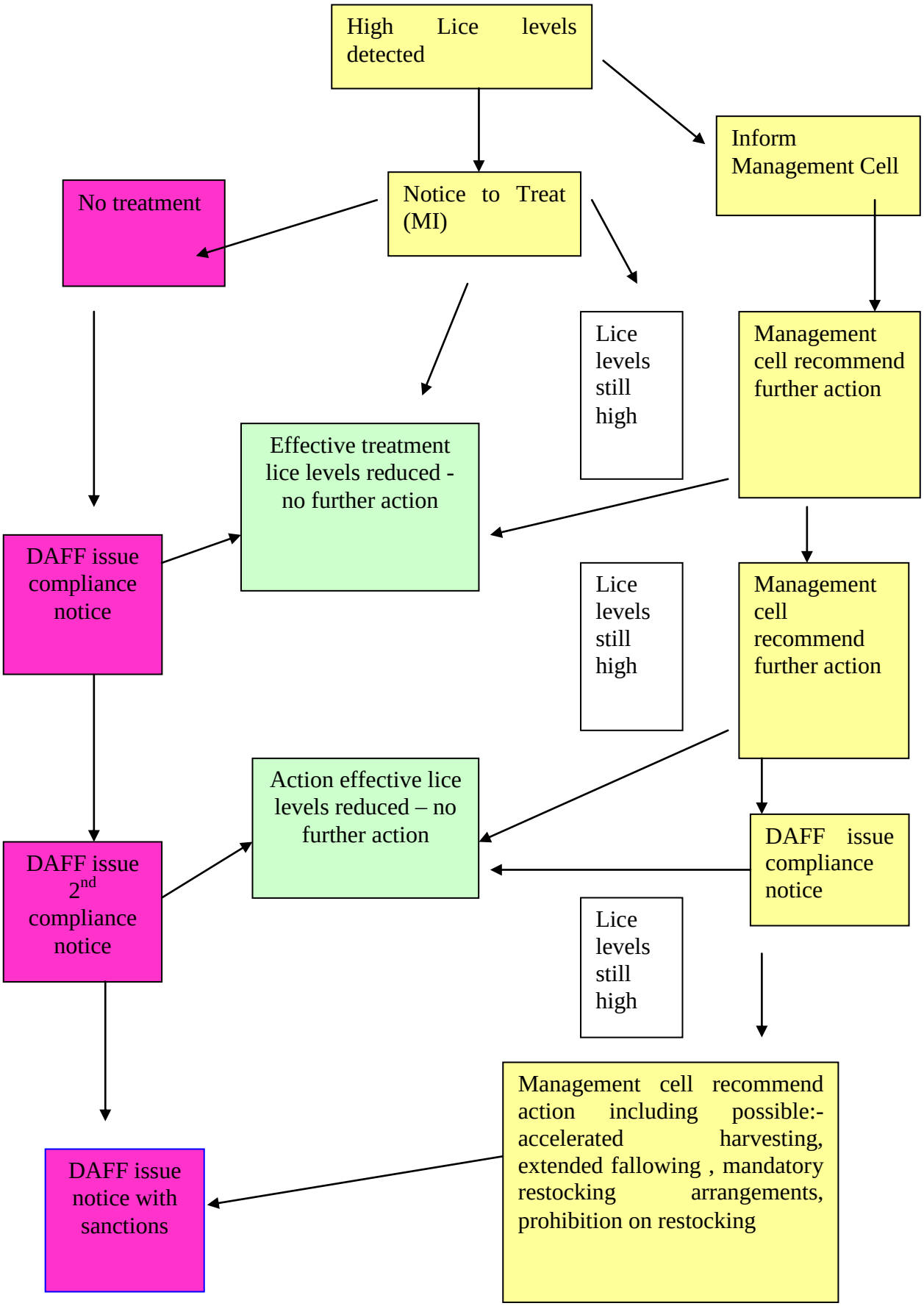
- The cell will attempt to convene within 72 hours of the meeting being called by the Marine Institute and it will meet with the farmer concerned, and review all pertinent data and facts. The MI representative shall act as the chair of the cell. The cell will then issue a recommendation for *further action*. The farmer concerned will be obliged to follow the *further action* recommendation of the sealice management cell, insofar as humanly possible.

- The *further action* recommendation from the cell shall be time specified and will be set down in writing and copied to the CZMD of the DAFF at the conclusion of the cell meeting or as soon as possible thereafter.

- Once the recommended course of action has been pursued, a further inspection will take place as soon as possible, and the results will be disseminated to the cell members. Depending on the relative success achieved, the cell may decide that no further action is required or that a further meeting and that a *further action* recommendation is needed. The subsequent *further action* recommendation of the cell shall also be mandatory and shall also be copied to the CZMD of the DAFF.

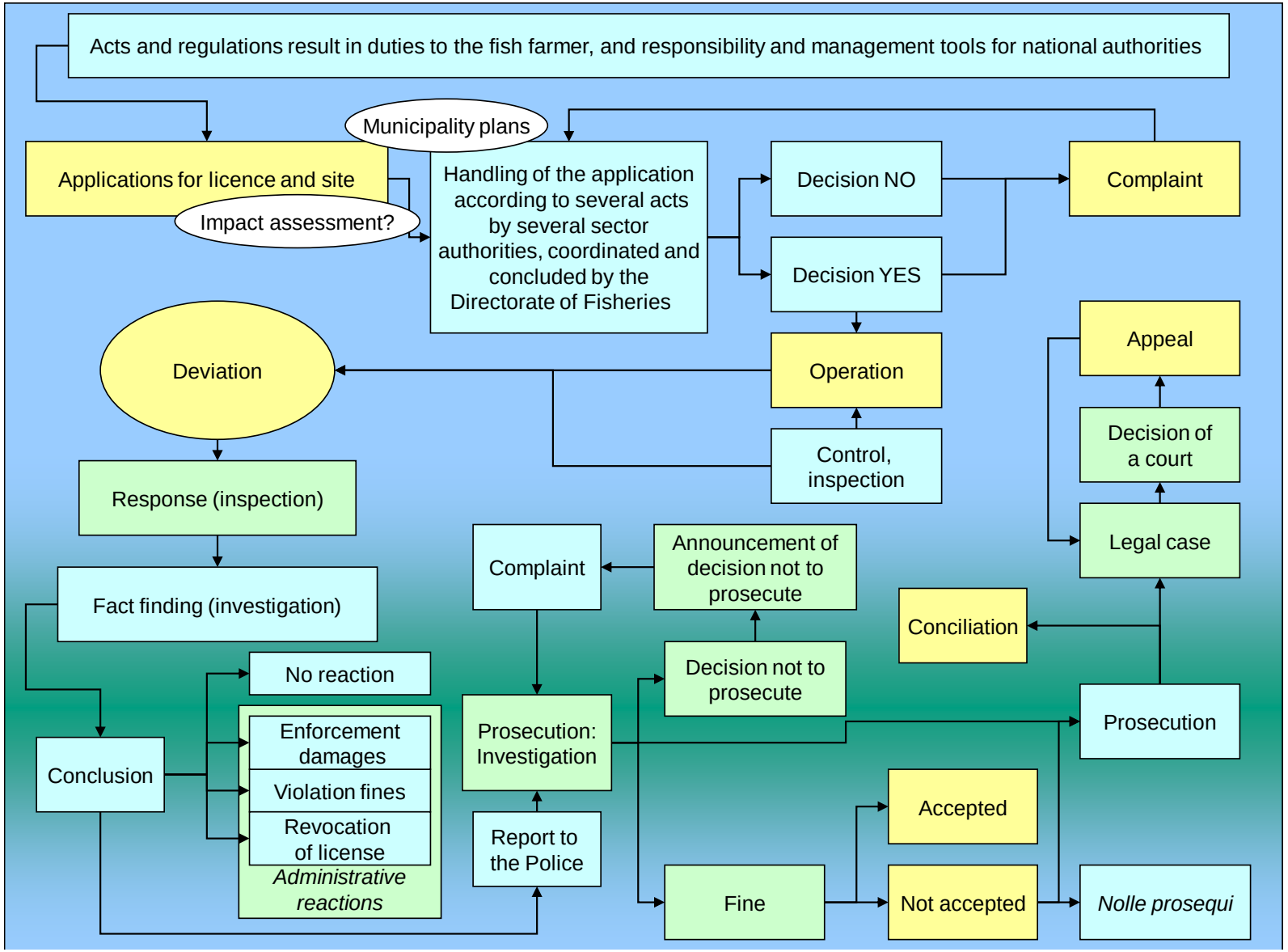
- Courses of action open to the cell for recommendation to the affected fish farmer, shall include selection of treatment medicine and the selection of treatment methodology. If after a number of attempts satisfactory control has not been achieved the cell may move to recommend accelerated harvesting, followed by extended fallowing post-harvesting. In exceptional circumstances the cell may also recommend mandatory restocking arrangements and/or an indefinite prohibition on restocking.

- The flow chart outlining the operation of the cell is set out below.


High Lice levels detected
Inform Management Cell
No treatment
Notice to Treat (MI)
Lice levels still high
Management cell recommend further action
Effective treatment lice levels reduced - no further action
DAFF issue compliance notice
Lice levels still high
Management cell recommend further action
Action effective lice levels reduced – no further action
DAFF issue 2nd compliance notice
DAFF issue compliance notice
Lice levels still high
Management cell recommend action including possible:- accelerated harvesting, extended fallowing , mandatory restocking arrangements, prohibition on restocking
DAFF issue notice with sanctions

ATF(09)18

Decision Tree for Applications for Salmon Farming Licences in Norway


Acts and regulations result in duties to the fish farmer, and responsibility and management tools for national authorities
Municipality plans
Applications for licence and site
Impact assessment?
Handling of the application according to several acts by several sector authorities, coordinated and concluded by the Directorate of Fisheries
Decision NO
Decision YES
Complaint
Deviation
Operation
Appeal
Decision of a court
Control, inspection
Response (inspection)
Legal case
Complaint
Announcement of decision not to prosecute
Fact finding (investigation)
Conciliation
No reaction
Decision not to prosecute
Prosecution
Enforcement damages
Violation fines
Revocation of license
Administrative reactions
Conclusion
Prosecution: Investigation
Report to the Police
Accepted
Fine
Not accepted
Nolle prosequi

Annex 4

SLG(10)7

ISFA Comments on the
"Draft Report of the Aquaculture, Introductions and Transfers
and Transgenics Focus Area Review Group"
April 30, 2010
London

These comments represent ISFA's initial feedback to the Report. It is ISFA's intent to submit a more detailed report in time for NASCO's next mailing.

General Comments:

The International Salmon Farming Industry shares the objective of conserving and enhancing wild salmon stocks.

- ISFA members help to preserve wild salmon by filling the consumer demand for high quality, nutritious salmon thereby reducing pressure on wild Atlantic Salmon.
- ISFA promotes an environmentally sustainable and economically viable salmon farming sector that is focused on continuous improvement, innovation and collaboration.
- Significant milestones have been reached in the areas of containment and fish health and the industry welcomes NASCO's support for access to a full suite of tools for fish health management.

An environmentally sustainable, socially responsible and economically viable international salmon farming industry should not be impeded, but rather complemented by the work undertaken by NASCO.

Specific Comments on the Draft Report and Review Process

1. **Process**
   A better engagement of ISFA members within the review process, both in the drafting of the FAR reports and in the Review Group itself would have led to a more effective, constructive and productive process.
   The Review Process and the Report submission process is not clearly defined. The Report would be more complete if an accurate assessment of the cost were included.
   ISFA requests that the Liaison Group be given the opportunity for comment and input into the final report of the Review Group after the Special Session in 2010 and before NASCO 2011.

2. **Clarity on Goal statements**
   While the Task Force affirmed the common goals of 100% of farms having effective sea lice management and the containment of 100% farmed fish in all production facilities, the Review Committee should have looked for progress towards these goals, rather than achievement. (see page 14 – box under Introduction: "…*no jurisdiction was able to show that it had reached a situation where it had achieved the international goals*.") If the Review Committee only looks for achievement of the international goal, the report will always be negative and progress will not be recognized.

3. **Opinions rather than evidence and science-based comments**
   The Draft Report contains a number of opinions and beliefs that are not evidence-based. Such comments should be referenced to link them to the appropriate scientific background. Some examples are:
   - "resistance to sea lice treatment is a worrying development" statement on page 16
   - section 5.26 regarding responsibility for setting standards
   - section 5.28 "sea lice larvae can survive independently for 20-50 days"
   - page 14 Box entitled "Scale of Activities"

4. **Role of Special Interest Groups on the Review Group**
   There needs to be a clear recognition that the NGOs are special interest groups, not independent reviewers. The NGO statements (page 17) should be included only as an appended Minority Report.

   Our understanding was that this was to be focused, tightly controlled professional Review undertaken by selected members of the review committee. However, the NGO / special interest group members of the Review Committee treated it as a public consultation and circulated the documents widely.

   Unlike the NGO community, ISFA was not only excluded from the Review committee; its members were not given access to other countries' reports.

   It is our understanding that members of the Review Committee did not review their own country's reports. (page 7 – 5.6 d) However, this apparently did not apply to the NGO / Special Interest representatives. ISFA views this as a clear conflict of interest.

5. **Annex 1 – CV of Reviewers should be attached**
   It is normal practice for a Report of this nature to include an Annex with the CV of each of the reviewers and an identified Chairman. In keeping with NASCO's commitment to transparency, this should be added to the Report.

In summary, the science for management practices is changing quickly and we need to be able to bring new science to the table at all times. The reporting measures were not

well understood and the reporting template proved to be restrictive and did not allow for enough information in a way that demonstrates how progress has been made.

Annex 5

SLG(10)4

The Salmotrip Project

Introduction

1. The Williamsburg Resolution identifies as an area for research and pilot testing the production of sterile fish. It recognises that the methodology and techniques for sterilisation are now well developed and that research should focus on developing strains of sterile fish which could perform at a level similar to current strains of fish used in farm production. Furthermore, the Resolution recommends that trials should be encouraged to evaluate the performance of strains of sterile fish under production conditions.

2. At the NASCO/ISFA Liaison Group's one day workshop entitled 'Wild and Farmed Salmon – Working Together' held in 2005, there was a session devoted to the pros and cons of using sterile salmon in farming and the possible opportunities for cooperative trials. It was clear from this session that the use of all-female triploids is currently the only available approach for the commercial-scale production of sterile salmon for use in farming. Information presented showed that the use of all-female triploids could contribute to addressing concerns about genetic interactions between wild and farmed salmon because, in trials, many fewer triploid salmon returned to freshwater than diploid salmon. However, there are production problems for the industry and concerns about welfare issues and possible consumer resistance to triploids which might be perceived as genetically modified fish (although they are not). One of the presenters suggested that the production problems could be resolved through selection programmes. The workshop recommended that issues concerning the use of sterile salmon in farming be considered further by the Liaison Group.

3. At the meeting of the Liaison Group's Task Force in 2009, a brief report was presented on an EU-funded research programme entitled 'Salmotrip'. The NASCO Secretariat was asked to obtain more information on the objectives of the project and progress to date. The following overview has been developed based on information on the 'Salmotrip' website, www.salmotrip.stir.ac.uk, and discussions between the NASCO Assistant Secretary and the project coordinator, Dr Herve Migaud.

Aims of Salmotrip

4. Salmotrip is a three year (2008 – 2010) feasibility study into triploid Atlantic salmon production. The project is funded through the EU Seventh Framework Programme. The project website notes that while problems were encountered with triploid salmon production in the 1990s (poor growth and survival in seawater and increased rate of deformities) they have the potential to make an important contribution towards a more sustainable and environmentally friendly salmon industry. Furthermore, the use of sterile salmon offers some advantages to the industry in terms of avoiding the costs associated with early maturation (use of artificial lighting regimes, grading, loss of

quality) and in protecting valuable strains developed through selective breeding. However, it is recognised that prior to implementing such a radical change within the industry a sounder understanding of triploid requirements and performance is needed at a commercial scale.

Partners

5. Salmotrip is a trans-national collaborative project with the following partners: the University of Stirling (UK – Lead Coordinator), the Institute of Marine Research (Norway), Wageningen University (Netherlands), Landcatch Natural Selection (UK), Aquagen (Norway), Sarl Salmo (France), Marine Harvest (UK) and CAC (Norway).

Structure of Salmotrip

6. Salmotrip comprises five workpackages:

Family Performance – the aim is to determine the interaction of family and ploidy on salmon performance. The project will evaluate the best families for traits of interest (growth, flesh quality, disease resistance, etc) observed in field trials.

Culture Sensitivity – the aim is to determine which environmental conditions and husbandry procedures and/or combinations thereof are detrimental to triploid welfare.

Out-of-season smolts – the aim is to investigate the effect of triploidy on out-of-season smoltification and to identify the determining and/or limiting factors.

Commercial field trials – the aim is to conduct full-scale field trials to evaluate triploid and family performance under commercial conditions (egg to market size).

Market perception – the aim is to assess consumer perception, product acceptance/quality and to develop marketing strategies for triploid salmon.

Deliverables

7. The deliverables from the project include:

- transferring triploid induction technology to SMEs;
- strengthening knowledge on triploid biological and culture requirements;
- advancing knowledge of the smolt process and monitoring;
- providing triploid specific smoltification regimes;
- developing a welfare scheme for triploid fish;
- defining parentage contribution to performance based on ploidy;
- identifying the perceived risk-benefits of triploidy and defining a marketing strategy.

8. Overall, the results of Salmotrip will deliver new knowledge on triploid salmon culture that will aid salmon SMEs and EU legislators to make decisions on the

potential implementation of triploid salmon within the salmon industry as a measure to minimise environmental genetic impacts while improving fish welfare and food standards by maintaining a year round high quality product that is acceptable to the consumer.

Conclusions

9. In summing-up the Trondheim Workshop it was recognised that while the use of all-female triploid salmon in farming could eliminate the potential for adverse genetic impacts on the wild stocks, from the industry's perspective there are concerns about poor performance in sea water, incidence of deformities and marketing aspects. There could, therefore, be additional costs in such use as there would also be in ensuring 100% containment as required under the BMP Guidance developed by the Liaison Group. The costs to the industry may, however, be balanced by some advantages and cost savings. A clear message from the Workshop was that triploid salmon need to be treated almost as a 'novel species' and that many of the issues for the industry could be addressed through selecting the best performing triploid strains. The conclusion from the Workshop was that these issues should be very carefully considered by the Liaison Group. However, until recently there has been little new research since 2005 that could inform the debate within the Liaison Group. The Salmotrip project is focusing on each of the concerns raised by the industry. Clearly, there is likely to be a need for further research when the project concludes later this year and perhaps the members of the Liaison Group could support proposals for such research.

10. The Salmotrip Coordinator is looking into the possibility of arranging an informal session on the Salmotrip project in conjunction with the European Aquaculture Society meeting in Porto, Portugal during 5 – 8 October 2010. This would provide a valuable opportunity for any members of the Liaison Group who plan to attend the EAS event to hear, in more detail, about the progress made during the project. Of particular interest may be the results of both commercial-scale trials and a questionnaire study of consumers conducted in the UK, France and Spain by researchers at the University of Wageningen (one of the partners in the project). There are industry concerns that consumers would not accept triploid salmon whereas the wild fish interests have referred to the marketing of other triploid aquaculture products, including rainbow trout and oysters, and questioned if a marketing strategy for triploid farmed salmon could highlight the benefits the use of such fish could have in safeguarding the wild stocks from genetic and other impacts.

11. The NASCO Assistant Secretary will continue to liaise with the project coordinator and inform the Liaison Group of developments, in particular whether or not there will be an informal session at EAS 2010.

Annex 6

SLG(10)5

Revisions to the Guidance on Best Management Practices to Address Impacts of Sea Lice and Escaped Farmed Salmon on Wild Salmon Stocks

At the Second Meeting of the ISFA/NASCO Task Force on Best Practice in Aquaculture to Address Impacts on Wild Salmon Stocks some minor inconsistencies in the terminology used in the BMP Guidance, SLG(09)5, were noted. These concerned the terms escape, escaped salmon and escape events. The Task Force recommended that the BMP Guidance be amended and the changes proposed by the Task Force have been incorporated in the attached revised version (the changes are shown as tracking). The Liaison Group is asked to adopt this revised version of the BMP Guidance.

SLG(09)5rev

Guidance on Best Management Practices to address impacts of sea lice and escaped farmed salmon on wild salmon stocks

1. Since 1990, NASCO has co-convened three major international symposia to ensure that it had the best available information on interactions between wild and farmed salmon to guide its decisions. In 1994, in response to the information presented at these symposia, NASCO adopted the 'Oslo Resolution' designed to minimise impacts of aquaculture on the wild salmon stocks. The Oslo Resolution had been developed in consultation with the salmon farming industry and, in order to strengthen this relationship, a Liaison Group was established in 2000. The objective of the Liaison Group is to establish mutually beneficial working arrangements in order to make recommendations on wild salmon conservation and sustainable salmon farming practices, to maximise potential benefits and to minimise potential risks to both. Through the Liaison Group Guidelines on Containment of Farm Salmon were developed and reports on progress with developing and implementing containment action plans are made to the Liaison Group. These guidelines, together with Guidelines on Stocking and elements to ensure consistency with the Precautionary Approach, were incorporated into a new Resolution, the Williamsburg Resolution, CNL(06)48, adopted in 2003 and amended in 2004 and 2006.

2. The most recent NASCO/ICES symposium held in Bergen in 2005 highlighted that while much progress had been made in addressing impacts of aquaculture and in better understanding the nature of these impacts, sea lice and ~~escapes~~ escaped salmon were identified as continuing challenges both for the industry and the wild stocks and on which further progress was urgently needed. NASCO, therefore, decided that it would establish a Task Force comprising representatives of the Parties, the salmon farming industry and NASCO's accredited NGOs with the aim of: identifying a series of best practice guidelines and standards to address the impacts of aquaculture on wild salmon stocks; to identify knowledge gaps and research requirements to address them; and to consider if, and how, impact targets can be identified. In accordance with its Terms of Reference, the Task Force collated existing Codes of Practice as contained in document ATF(09)7 and developed this guidance on best management practices, framed around the elements of the Williamsburg Resolution, designed to achieve international goals to address the impacts of sea lice and ~~escapes~~ escaped salmon on wild Atlantic salmon. The guidance provides a range of measures from which those most appropriate to the local conditions should be put into place to safeguard the wild salmon stocks.

3. This guidance is intended to supplement the Williamsburg resolution and to assist the Parties and jurisdictions: in managing salmon aquaculture, in cooperation with their industries; in developing future NASCO Implementation Plans; and in preparing their 2010 and subsequent Focus Area Reports on aquaculture and related activities. It is anticipated that the triennial reviews of the FARs will provide a mechanism for assessing progress towards achievement of the international goals. It is the intention that NASCO and its jurisdictions explore, in collaboration with industry, opportunities for cooperative scientific research in support of the goals.

	Sea lice	Containment
International Goals	**100% of farms to have effective sea lice management such that there is no increase in sea lice loads or lice-induced mortality of wild salmonids attributable to the farms.**	**100% farmed fish to be retained in all production facilities**
	Use Williamsburg Resolution as basic guidance, supplemented as below	
Best Management Practices (BMPs)	Area management, risk-based, integrated pest management (IPM) programmes that meet jurisdictional targets for lice loads at the most vulnerable life-history stage of wild salmonids.	Codes of Containment including operating protocols
	Single year-class stocking	Technical standards for equipment
	Fallowing	Verification of compliance
	Risk-based site selection	Risk-based site selection
	Trigger levels appropriate to effective sea lice control	Mandatory reporting of ~~escapes~~ escape events and investigation of causes of loss
	Strategic timing, methods and levels of treatment to achieve the international goal and avoid lice resistance to treatment	Adaptive management in response to monitoring results to meet the goal
	A comprehensive and regulated fish health programme that includes routine sampling, monitoring and disease control	
	Lice control management programmes appropriate to the number of fish in the management area	
	Adaptive management in response to monitoring results to meet the goal	
Reporting & Tracking	Monitoring programme appropriate for the number of farmed salmon in the management area and sampling protocols effective in characterising the lice loads in the farms and wild salmonid populations.	Number of incidents of ~~breach~~ escape events and standardised descriptions of the factors giving rise to ~~escapes~~escape events
	Lice loads on wild salmonids compared to areas with no salmon farms	Number and life-stage of escaped salmon (overall number; % of farmed production)
	Lice-induced mortality of wild salmonids (e.g. as monitored using	Number of escaped salmon in both

	sentinel fish, fish-lift trawling, using batches of treated smolts)	rivers and fisheries (overall number; % of farmed production) and relationship to reported incidents
	Monitoring to check the efficacy of lice treatments	

	Sea lice	Containment
Factors Facilitating Implementation	Development of a monitoring programme appropriate for the number of farmed salmon in the management area and sampling protocols effective in characterising the lice loads in the farms	Monitoring of rivers for ~~escapes~~ ~~d~~escaped salmon
	Access to a broad suite of therapeutants, immunostimulants and management tools	Site appropriate technology
	Collation and assessment of site selection and relocation criteria	Advanced permitting to facilitate recapture and exchange of information on effectiveness of recapture efforts
	Regulatory regimes which facilitate availability of alternative sites, as necessary, to support achievement of the goal	Technology development (e.g. cage design, counting methods for farmed salmon, methods to track origin of escaped salmon and their progeny)
	Training at all levels in support of the goal and to increase awareness of the environmental consequences of sea lice	Training at all levels in support of the goal and to increase awareness of the environmental consequences of ~~escapes~~escaped salmon
	Monitoring of lice levels: in areas with and without farms; before, during and after a farm production cycle; and in plankton samples	Assessments of the relative risks to the wild stocks from ~~escapes~~ escaped salmon from freshwater compared to marine facilities and from large but infrequent escape events compared to small but frequent escape events.