FIS Endnote 2

FIS Meeting Agenda

1. Welcome and introduction of new members
2. Discussion and approval or revision of agenda
3. Nominations and election of a new FIS Chairman
4. Review and discussion of the implementation of PICES X decisions
5. Proposals/topics/issues for the session topic for PICES XII (October 2003)
6. Review and progress report of WG 16 on *Climate change and fisheries management*
7. Proposals with financial implications
   a. Inter-sessional meetings
   b. Travel support and cost implications for supporting travel to PICES meetings
   c. Publications of reports and cost implications
8. Co-sponsored meetings and relations with other organizations, fisheries organizations or commissions - review and discussion.
9. Review of the PICES Review Committee Report
10. Formation of a new Working Group
11 Review North Pacific Ecosystem Status Report
12. Discussion/recommendations for a vision and future directions for FIS
13. Improved interactions with/role of TCODE
14. Capacity building within PICES and its member nations
15. Improved communications
16. Draft of report and summary of FIS recommendations to Science Board

FIS Endnote 3

Interim Report of Working Group 16
on *Climate change, shifts in fish production, and fisheries management*

The Working Group 16 met on October 19, 2002, just prior to PICES XI. The meeting was well attended with 21 participants representing all member countries. Dr. Gordon A. McFarlane was appointed rapporteur. Opening remarks were given by the Co-Chairmen. Dr. Richard J. Beamish observed that the objectives of WG 16 represent one of the principle objectives of the founders of PICES. For 10 years we have studied the impacts of climate and climate change on the marine ecosystems of the North Pacific. It is now time to use this knowledge to provide advice on the potential impacts on our major fisheries with the impacts of human induced climate change on our doorstep. Thus the WG 16 report is both timely and important. Dr. Akihiko Yatsu concurred that this is the final year for the Working Group, that it must complete the report.

Developing a Working Group report

WG 16 is now beginning Phase III, the synthesis phase, where speculation on climate impacts on fisheries in the future will be developed and the final report will be written. The points of contact to facilitate Phase III were agreed to be Drs. Yatsu (Japan), Beamish (Canada), Suam Kim (Korea), Xian-Shi Jin (China) and Elena P. Dulepova (Russia). The United States will identify their point of contact after the Annual Meeting[1].

Dr. Yatsu discussed the templates that he had distributed by e-mail and presented the completed templates for Japan's contribution. As an example for progression to Phase III, Dr. Yatsu presented environmental indices and relationships to productivity (specifically recruitment). There was general discussion of the results presented and participants agreed it was a good first step to initiating Phase III. However, not all species of importance will have productivity information, and providing relationships to environmental indices will be difficult. The lack of productivity information should not be seen as an impediment to

[1] Dr. Steven J. Bograd (PFEL) was appointed as the US point of contact

completing sections of the report for all species. It was agreed that, where available, productivity information will be included and analyzed in relation to climate variables. Speculation will be provided on future trends for all species discussed even if historical productivity information is not available.

Discussion focused on a standardized approach to providing speculation on the future trends of populations in relation to climate change and selecting a future reference point. Dr. James R. Irvine expressed concern that the speculation will be qualitative and not quantitative. Dr. Beamish noted that he has been involved with several international committees on climate change impacts, such as IPCC, and that qualitative speculation is universal. Typically, reports similar to the WG 16 final report provide predictions of trends for the years 2050 and 2100. These two years tend to encompass years in which climate models predict a doubling of atmospheric CO_2. There are several General Circulation Models (GCM) that provide predictions of various climate variables under several greenhouse gas emission scenarios. Dr. Beamish pointed out that the climate models are not yet successful in incorporating Pacific decadal-scale variability that has been observed to be important for fish in the North Pacific. He suggested that authors will be required to deal with these complexities by considering several scenarios. Several Working Group members expressed their need for summary information on the GCM climate variable predictions for 2050 and 2100. Dr. Beamish indicated that he had distributed this information when he sent each member the extensive background material. There was discussion on the appropriate year to use as a reference point. Dr. Beamish advised using 2050 and 2100 to be consistent with primary literature and international committees. Dr. Yatsu suggested using the year in which a doubling of CO_2 is predicted by a specific GCM. Dr. George W. Boehlert recommended that selecting a time frame closest to the present would be the least speculative and perhaps the best selection. It was agreed to use the year 2050 as the reference point for speculation of future trends of climate change impacts on fish populations.

Dr. Yatsu suggested that a representative of NPAFC be asked to join the Working Group to provide input into the salmon sections. Dr. Beamish noted that he is a member of NPAFC. It was agreed that a representative is not required and selection of one could complicate the preparation of the final report. Additionally there would be delay for completion if the approval of the final report by NPAFC was required. It was concluded that FIS should request NPAFC to provide commentary (not approval) on the completed salmon portions of the Working Group's final report.

Dr. Beamish presented information on a proposal for a "Pink salmon watch" program in the North Pacific. He suggested that pink salmon may be the best indicator of climate change because of their short life span, their distinct generations (odd and even years), and their wide distribution. He reported that NPAFC is interested in setting up a monitoring program and will be collating historical pink salmon data for all regions of the North Pacific. It was suggested that a joint PICES-NPAFC pink salmon monitoring program would be an appropriate way to ensure the efforts of WG 16 be continued into the future.

Dr. Boehlert observed that there was a lot of information to distribute among the Working Group members and that e-mail is an ineffective method of distribution. Canada agreed to provide a website for members to download documents and information.

Dr. Beamish asked if the impacts of climate change on aquaculture and sea ranching be included in the final report. He noted that for western Pacific countries, sea ranching is an important fishery. It was agreed that countries can include speculation on the impacts of climate change on aquaculture and sea ranching in their reports if they would like to.

The Working Group discussed the timeframe of deliverables for the upcoming Phase III preparation of the final report. Each country is to prepare their report for each species of interest using the following format:

- Catch data (figures, tables and text).
- Productivity data. Where available, include productivity data (*e.g.* recruitment, abundance) with an explanation of estimation and definition.
- Species biology
- Important environmental variables
- Fishing effects. If possible, separate fishing effects from natural variability.
- Potential species response to climate change scenarios, with 2050 as a reference point.
- Relevant literature (not literature cited, but useful literature for further reading).

Timetable for preparing a report

Dr. Yatsu asked if an interim meeting would be required. WG 16 members reported that it was not financially feasible for them. Dr. Yatsu reported that he would be able to travel to Canada to coordinate the completion of the final report.

For each country the 10 most important species would be included, plus other species of interest. This information will be used to complete an assessment of the impacts of climate and climate change on the 10 most important species in the North Pacific Ocean. Dr. Beamish agreed to try and finish the Canadian draft by the end of February 2003, and provide a copy to the other countries for their information. The two Co-Chairmen will collate the submission by each country on the species of importance. It was agreed that a draft report for Working Group discussion will be completed by the end of May 2003. A final report will be submitted to FIS at the end of August 2003.