

REPORT OF FISHERY SCIENCE COMMITTEE

The meeting of the Fishery Science Committee (FIS) was held from 13:30-17:30 hours on October 23, 2002. The Chairman, Dr. Douglas E. Hay, called the meeting to order and welcomed the participants. The meeting was attended by 14 FIS members and 20 observers representing all PICES member countries (*FIS Endnote 1*). The Chairman reviewed the original agenda and noted several modifications as follows. Decisions on agenda item 9 (PICES Review Committee Report) and agenda item 11 (North Pacific Ecosystem Status Report) were deferred to allow Committee members to read and comment on these reports. Also agenda item 5 was expanded to include discussion of the theme for PICES XIII in 2004.

Nominations and election of a new FIS Chairman (Agenda Item 3)

Dr. Yukimasa Ishida (Japan) was nominated and elected as the incoming FIS Chairman with the term of his appointment to begin immediately after this year's PICES Annual Meeting. The Committee thanked Dr. Hay for his leadership and valuable contribution to FIS activities over the past three years.

Implementation of PICES X decisions (Agenda Item 4)

The Working Group 12 on *Crabs and shrimps* completed a report on "Commercially important crabs, shrimps and lobsters of the North Pacific Ocean" that was published in December 2001 as PICES Scientific Report No. 19.

A 2-day Symposium on *Causes of marine mortality of salmon in the North Pacific and North Atlantic Oceans and in the Baltic Sea*, co-sponsored by NPAFC, NASCO, IBSFC, PICES and ICES, was held March 14-15, 2002, in Vancouver, Canada.

Three joint Topic Sessions and two FIS Topic Sessions were held at PICES XI in October 2002 (see session summaries elsewhere in this report).

Proposed FIS Topic Sessions and joint Topic Sessions for PICES XII and Annual Meeting theme for 2004 (Agenda Item 5)

PICES XIII theme

The Committee endorsed the possible theme proposed by Dr. Jeffrey J. Polovina (U.S.A.) for PICES XIII in 2004 (Honolulu, Hawaii): "The North Pacific pelagic realm - an ocean far from continental boundaries".

Topic Sessions at PICES XII

FIS received ten proposals for sessions at PICES XII in 2003 (Seoul, Republic of Korea). Most proposals were for full-day sessions and each was presented by one of the potential convenors or representative. The Committee discussed and selected proposals that best matched the stated theme of PICES XII, as well as FIS objectives. In general, FIS approved all of the proposals but indicated that some could be improved with more focus. In the discussion, FIS clarified whether some could be combined, or if one or more could be convened as half-day sessions (rather than full-day sessions), and if one or more could be held at PICES XIII. Following these discussions FIS developed a prioritized list of recommended FIS Topic Sessions and joint Topic Sessions with other Committees for PICES XII, including approximate titles, duration and potential convenors:

- A ½-day MEQ/FIS Topic Session on *Ecosystem-based management in the North Pacific*; Convenors: Glen Jamieson (Canada), others TBD
- A ½-day FIS Topic Session (jointly with EASEC) on *Management of eel resources*; Co-convenors: Tae Won Lee (Korea) and Katsumi Tsukamoto (Japan)

FIS notes that, if necessary, this session could be held on a Sunday, prior to the main meeting. As this topic was requested by the host country, their views should be solicited prior to the finalization of the schedule.

- A ½-day FIS Topic Session on *Biology of predatory impacts on and by coastal sharks*; Convenor: Gordon H. Kruse (U.S.A.)
- A ½-day FIS Paper Session; Convenor: Chang Ik Zhang (Korea)

It was noted that there was no FIS Paper Session at PICES XI, and pointed out that convening such session at PICES XII would enhance fisheries science activities in PICES and allow participation by more fisheries scientists with different interests.

FIS felt that the remaining proposals were worthy but for various reasons, including the limitations of available time, could not be convened at PICES XII:

- *Biodiversity and fisheries*. This topic could be considered for PICES XIII as a full day session.
- *Sablefish fishery and ecology*. This topic could be deferred until PICES XIII.
- *Latitudinal responses in productivity and recruitment* (proposed as a joint REX/FIS Topic Session). FIS felt this topic was very broad and required more focus.
- *Theory and application of fluctuating carrying capacity* (proposed as a joint BIO/FIS/MEQ/CCCC Topic Session).
- *Physical processes impact on biological productivity and fish population with special attention to variability in fresh water input* (proposed as a joint POC/BIO/FIS Topic Session).
- *Early life history of small pelagic fishes in the North Pacific*.

Progress report of WG 16 on *Climate change and fisheries management* (Agenda Item 6)

The Working Group 16 met on October 19, 2002, just prior to PICES XI (*FIS Endnote 3*). The meeting was well attended with 21 participants representing all member countries. The Working Group reviewed the results of Phase II, which was the compilation of templates that described the biology and population dynamics of the major species. Using the templates provided by Japan, there was a substantive discussion on how to use existing information to estimate how climate change will affect the dynamics of the populations in the future. Participants realized that “projections” are going to result from informed speculation and discussion amongst WG 16 members. Representatives from each country agreed to consult other experts within their country when preparing reports.

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. Drs. Richard J. Beamish and Akihiko Yatsu agreed to synthesize and integrate that assessment into a summary report using the information provided by individual countries. A first draft of the report will be available for Working Group discussion by May 30, 2003, with the final draft of the report completed by the end of August 2003.

Proposals with financial implications (Agenda Item 7)

Inter-sessional meetings

- No inter-sessional meetings are proposed between PICES XI and PICES XII. FIS suggests that any cost savings be applied to supporting invited speakers for FIS-supported Topic Sessions at PICES XII.

Requests for travel funding

- FIS expects that funds (~CDN \$5,000) will be available for invited speakers for FIS-supported Topic Sessions at PICES XII.

Publications

- The final report of WG 16 will be published as a PICES Scientific Report in 2004.
- The number of copies of each PICES Scientific Report in print should be reduced in order to save money. Instead, an electronic version of the report should be considered with paper copies for libraries and similar institutions.
- FIS also discussed and tentatively supported the concept that PICES Scientific Reports could be sold to recover printing costs.

Co-sponsored meetings and relationships with other organizations (Agenda Item 9)

There are no specific plans for co-sponsored meetings or other collaboration identified at the Committee meeting, but it was suggested that requests for co-operative meetings or collaboration with other organizations, such as ICES, could arise within the next year, before PICES XII. In such instances FIS notes that the PICES proposals for cooperation should be authorized by the Science Board, before PICES presents them to other organizations. FIS realizes that some issues need rapid action so FIS should be consulted on PICES-related issues by e-mail if decisions are required inter-sessionally.

Review of the PICES Review Committee Report (Agenda Item 9)

FIS members requested access to the latest revision of the report as soon as possible, and suggested that a draft be posted on the PICES web site. Members agreed to send their comments to Dr. Ishida (FIS Chairman-elect) who will collate and summarize the response of the Committee. Dr. Hay agreed to assist Dr. Ishida with the completion of this task.

New Working Groups (Agenda Item 10)

The Working Group 16 is still active and expects to complete its work in 2003. FIS noted that the idea discussed at PICES X for a new Working Group on *Ecosystem consideration in fisheries management* is very similar to a new proposal received at PICES XI for a Working

Group on *Ecosystem-based management*. Both proposals could be combined and considered for implementation in 2003. Prior to that, however, the terms of references for a new Working Group should be considered and drafted through a joint MEQ/FIS Topic Session at PICES XII.

Review of the North Pacific Ecosystem Status Report (Agenda Item 11)

At the time of the meeting most FIS members had not read or did not have access to this report. A few members who had seen the report commented that downloading this graphic-intensive report may be difficult for some recipients. No review comments from FIS were possible at the time of the meeting. FIS requests clarification from the Secretariat about how PICES Committee members should make their views known to the Science Board and PICES.

Discussion/recommendations for a vision and future directions for FIS (Agenda Item 12)

Because of time restraints, this topic received only a brief discussion at the meeting. FIS expects that in future years PICES should put much more weight on fishery science activities. FIS noted that there are many elements of fishery science that are poorly represented in PICES and we should strive to improve this.

Improved interactions with/role for TCODE (Agenda Item 13)

Again, because of time restraints, this topic received only a brief discussion at the meeting. FIS reconfirmed that TCODE could assist by compiling meta-databases relevant to fisheries, fish and invertebrates.

Capacity building within PICES and its member nations (Agenda Item 14)

This topic was added to the agenda at the request of the Science Board, as was intended to be a discussion of comments in the PICES Review Committee Report. The report, however, was not available to most of the FIS members at the time of the meeting. Therefore such a discussion was deferred pending the distribution

of the Review Committee Report. FIS commented, though, that capacity building within PICES is working well but stressed that scientific exchanges should be enhanced.

Improved communication (Agenda Item 15)

This topic was also added to the agenda at the request of the Science Board. Press releases could be a mechanism for highlighting newsworthy items from the Annual Meeting. Session convenors, or others in PICES, should be consulted to determine if specific sessions will have items worthy of press releases. If appropriate, PICES should invite and inform the press about important scientific information that will be presented at the meeting. This process would be assisted by the submission and distribution of extended abstracts prior to the Annual Meeting.

FIS Endnote 1

Members

Richard J. Beamish (Canada)
George W. Boehlert (U.S.A.)
Elena P. Dulepova (Russia)
Douglas E. Hay (Canada, Chairman)
Anne B. Hollowed (U.S.A.)
Yukimasa Ishida (Japan)
Gordon H. Kruse (U.S.A.)
Takashi Minami (Japan)
Toshikuni Nakatani (Japan)
Laura Richards (Canada)
Mikhail Stepanenko (Russia)
Qingyin Wang (China)
Chang-Ik Zhang (Korea)

Best Presentation Award

As the FIS meeting occurred before the completion of scientific sessions, it was not possible to discuss nominations for the Best Presentation Award during the October 23 meeting. Following practices of previous years, the convenors of the FIS-sponsored sessions were asked to make the selection.

The 2002 FIS Best Presentation Award went to Alexey Baitalyuk (TINRO-Centre, Vladivostok, Russia) for his paper entitled “Contemporary stock status, distribution, place and role of Pacific saury in the Japan Sea/East Sea”.

Honourable mention was also presented to Kyung-Mi Jung (Pukyong National University, Pusan, Republic of Korea) for her paper entitled “Ecological characteristics of walleye pollock eggs in the south-eastern Bering Sea during the 1970s regime shift period”.

Participation List

Observers

Kenji Asano (Japan)
Vladimir Belyaev (Russia)
Alexander I. Glubokov (Russia)
Yeong Gong (Korea)
James R. Irvine (Canada)
Vladimir I. Karpenko (NPAFC)
Jacquelynn R. King (Canada)
Tokimasa Kobayashi (Japan)
Jae-Bong Lee (Korea)
Tae Won Lee (Korea)
Gordon A. McFarlane (Canada)
Igor V. Melnikov (Russia)
Yeong Chull Park (Korea)
Yasunori Sakurai (Japan)
Michael J. Schirripa (USA)
Yasuhiro Ueno (Japan)
Tokio Wada (Japan)
Won Seok Yang (Korea)
Akihiko Yatsu (Japan)
Xian-Yong Zhao (China)

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 Meeting¹.

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 CO₂. 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 CO₂ 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.

