

REPORT OF FISHERY SCIENCE COMMITTEE

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The meeting of the Fishery Science Committee (FIS) was held from 14:30-18:45 hours on October 12, 2003. The Chairman, Dr. Yukimasa Ishida, called the meeting to order and welcomed the participants. The meeting was attended by 12 FIS members and 17 observers representing all PICES member countries (*FIS Endnote 1*), and Dr. Jacquelynne R. King kindly served as rapporteur.

The Chairman reviewed the original agenda (*FIS Endnote 2*) and noted several modifications as follows. Decisions on agenda item 6 (Report from Study Group on *PICES Strategic Issues*) and agenda item 7 (North Pacific Ecosystem Status Report) were deferred to allow Committee members to read and comment on these reports by the end of November. Also, agenda item 8 (Report from Study Group on *PICES Capacity Building*) was deferred to allow the members to read and comment on this report by October 16 during this Annual Meeting. Agenda item 9 (Steps towards next major PICES scientific programs) and agenda item 14 (PICES XIV theme) were not discussed in detail, but the information was provided for future consideration.

Implementation of PICES XI decisions (Agenda Item 3)

At PICES XII, FIS co-sponsored three scientific sessions: a 1-day MEQ/BIO/FIS Topic Session on "Ecosystem-based management in the North Pacific"; a ½-day FIS Topic Session (jointly with EASEC) on "Management of eel resources"; and a ½-day FIS Paper Session. Summaries of the sessions are included elsewhere in this Annual Report.

The FIS Topic Session on "The role of sharks in marine ecosystems of the North Pacific Ocean" was cancelled due to the low number of submitted papers. Instead, some shark papers were presented during the FIS Paper Session.

Progress report of WG 16 on *Climate change and fisheries management* (Agenda Item 4)

Working Group 16 met on October 11, 2003, and had a successful meeting (*FIS Endnote 3*). The Working Group heard reports from Canada, China, Japan and Russia. Documented reports will be received shortly and will provide a useful base for the final report. The Working Group Co-Chairmen, Drs. Richard J. Beamish and Akihiko Yatsu, will compile and distribute a draft WG 16 report by the end of February. If a consensus cannot be reached regarding the content, it will be noted in the report. A report has not yet been received from the United States; however if one is not received, there is existing literature that will allow WG 16 to integrate information into their final report. The final report will be presented at the PICES Thirteenth Annual Meeting with the expectation that the final report will be ready for publication by the end of 2004. The Working Group agreed that before the report is published, it will be sent to NPAFC for review and comment, because the report includes salmon. Working Group members also agreed to present the summary report at meetings of other organizations (*e.g.*, ICES). The report may serve as a template for organizations concerned with effect of climate change on shifts in fish production and fisheries management. Financial support is only required for publication of the final report, and funds will not be needed until the 2005 fiscal year.

Proposals for new Working Groups (Agenda Item 5)

Joint Working Group on *Ecosystem-based management*

Dr. Glen Jamieson presented a proposal for a joint MEQ/FIS Working Group on *Ecosystem-based management science and its application to the North Pacific* and provided tentative Terms of Reference. The proposed Working Group has a broader definition than simply

fisheries management applications. During discussion of this proposal, Canada asked whether there were any examples of ecosystem-based management recently in place in the Pacific. There are currently no such examples, but North American governments have mandates to develop this approach. The United States suggested that Objective 1 in the proposed deliverables should include the development of a definition of ecosystem-based management, or at least making comparisons among existing definitions. Japan noted that effluent (particularly BOD) from aquaculture and its effect on benthic invertebrates is an important problem posed by aquaculture, and they would like to see inclusion of such problems in ecosystem-based management approaches. The United States stated that ecosystem-based management does involve all processes, including anthropogenic influences, in the marine environment. Russia mentioned that production of lower trophic levels, such as zooplankton and myctophids, are often omitted from discussions of ecosystem-based management, and that maintenance of biodiversity and sustainable populations should include consideration of lower trophic levels. Korea supported the establishment of a Working Group. Japan noted that since the topic is very broad and complicated, FIS should focus this Working Group more on fisheries management related issues. Japan also suggested that in order to move away from single species stock assessment, the inclusion of predator-prey relationships into multi-species stock assessments is required, and this is the direction of interest to Japan on ecosystem-based management topics.

After a lengthy discussion, FIS decided that a joint Working Group should be established, and the first task should be to collect and review existing information on ecosystem-based management in PICES member countries, and use the review to refine and focus the Terms of Reference. The originally proposed Terms of Reference were further discussed and revised following the discussion at the MEQ/BIO/FIS Topic Session on “Ecosystem-based management science and its application to the North Pacific” (see *MEQ Endnote 5*).

Joint Working Group on Aquaculture

At the interim Science Board meeting, MEQ and FIS were asked to lead a discussion on forming a Working Group on the scientific issues of aquaculture. An initial proposal for a Working Group on “Aquaculture in the North Pacific – ecological assessment of risks and benefits” were reviewed by the Committee.

Dr. Ishida asked Committee members to comment on the appropriateness of aquaculture as a topic of interest for FIS, noting that a session on “Aquaculture in the ocean ecosystem” at PICES XII was sponsored by MEQ and BIO. The US members reminded the Committee that the Working Group on aquaculture was initially proposed by MEQ, but it was suggested that FIS also be included. If aquaculture involves ocean ranching, then CCCC should also be added as a sponsor. It was suggested that on the western side of the Pacific, ocean ranching is extremely important, and it should be included in the definition of aquaculture.

Reviewing the proposal, FIS noted that the focus of the Working Group would be marine and estuarine waters only, and not freshwater aquaculture. The explicit statement of marine or estuarine is missing from the Terms of Reference. Canada suggested that the demand for marine production will continue to increase, so aquaculture is a topic in which FIS should be involved. Korea agreed that it is an important topic of their interest. Dr. Ishida mentioned that salmon ocean ranching is a topic of interest to NPAFC, and that potential overlap and duplication should be avoided, so as to use limited research resources efficiently. In Japan, there are recent collaborations between agencies on aquaculture and there are developing issues with regards to many types of aquaculture that are not evident at this time. More time to make a decision on a Working Group would be appropriate for Japan.

In the interim, Canada recommended that a smaller MEQ/FIS study group undertake the drafting of the Terms of Reference for consideration in the future by PICES. It was suggested that the Terms of Reference be

presented at the interim Science Board meeting, so that initiation of the Working Group would not be delayed for a full year. Canada further proposed, and it was accepted by the Committee, that the study group meet after the aquaculture session to be held on October 14, to develop Terms of Reference that can be circulated to FIS members before the end of this Annual Meeting. This small group must include Asian scientists, so presenters from the aquaculture session should be asked to attend. The Terms of Reference prepared following recommendations from the aquaculture session can be found in *MEQ Endnote 6*. Discussion at this session also identified scientific issues to be considered in carrying out the Terms of Reference. These scientific issues are included in the summary of the session that is presented elsewhere in this Annual Report.

FIS agreed to support the establishment of the joint MEQ/FIS Working Group on aquaculture.

PICES web site revisions – information for FIS web page (Agenda Item 10)

Ms. Julia Yazvenko (PICES Secretariat) demonstrated the new PICES web site. Each group will have a separate page on this new site, and information was requested from FIS to post on the Committee's web page. The FIS Chairman will work with the PICES Secretariat to provide information to fit the proposed template, and will seek assistance from other FIS members as needed by e-mail.

Proposals with financial implications (Agenda Item 11)

Inter-sessional meetings

No inter-sessional meetings are proposed between PICES XII and PICES XIII.

Requests for travel support

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

Publications

There are no publications proposed for 2004. It is expected that the final report of WG 16 will

be completed by the end of 2004, and published in the PICES Scientific Report Series in 2005.

Co-sponsored meetings and relationships with other organizations (Agenda Item 12)

Discussion was focused on relations with the North Pacific Anadromous Fish Commission (NPAFC). FIS supported the recommendation that (i) PICES issue a "formal invitation" to NPAFC to present a report on the status of North Pacific salmon at each PICES Annual Meeting (the most appropriate venue within PICES for presentation of this report was left for discussion in PICES); and (ii) NPAFC consider an invitation to PICES to present the North Pacific Ecosystem Status Report at NPAFC Annual Meeting. In addition, there is a proposal for a joint PICES-NPAFC symposium with the working title "State of Pacific salmon and their role as indicators of the health of North Pacific ecosystems" to be convened in 2005, in conjunction with the NPAFC Annual Meeting. Dr. Ishida suggested that given the focus of the symposium is salmon, NPAFC should take a leading role for this meeting. FIS supported the intent of the proposed symposium.

Topic Session and workshop proposals for PICES XIII (Agenda Item 14)

Nine proposals were considered:

- 1) *Sardines in the North Pacific Ocean: What we know after a century of variability and where do we go from here?* (FIS/BIO; BASS/REX; GLOBEC)

Canada questioned whether this topic has adequate new information to warrant a 1-day session and to draw sufficient interest. The BASS Task Team Co-Chairman noted that the Task Team also had similar concerns and as such pared down the proposal to incorporate it into a workshop on their interests. China and Korea agreed that a focus on one species is too narrow and that including other species would be more appropriate. The Committee did not support this topic as a FIS-sponsored session.

- 2) *Top-down versus bottom-up control of the Bering Sea: What really drives the*

ecosystem?

The Committee suggested that this theme requires integration with other committees and has a lower priority as a FIS Topic Session.

- 3) *Application of Global Observing Systems to physics, fisheries and ecosystems (POC/FIS/CCCC)*

The Committee concluded that it may be too early to be able to link Global Observing Systems to fisheries.

- 4) *CCCC, GLOBEC, and GLOBEC-like results: First steps toward a synthesis of the impacts of large-scale climate change on North Pacific marine ecosystems (CCCC/FIS)*

The Committee suggested that this topic is more appropriate for a Science Board Symposium.

- 5) *Scale interactions of climate and biochemical systems: what do we need to get right? (PICES/CLIVAR Workshop)*

The Committee agreed that this workshop should be endorsed by FIS, but is not appropriate as a FIS Topic Session.

- 6) *Use of the ocean environment by migratory species (FIS/BIO)*

It was concluded that this topic needs to be more focused, but is of interest to FIS.

- 7) *Oceanographic hot spots: Common themes for top marine predators (BIO/FIS)*

It was noted that this theme appears to be very similar to the proposed theme on migratory species. FIS recommended that these two topics be integrated in one Topic Session.

- 8) *Role of sharks in marine ecosystems of the North Pacific (FIS)*

The Committee suggested that this topic could be integrated into the session on migratory species and top marine predators.

- 9) FIS Open (Paper) Session

Following consideration of all the proposals, the Committee recommended that a ½-day FIS Open (Paper) Session, and a 1-day integrated Topic Session (jointly with BIO) on migratory species and top predators be convened at PICES XIII.

Other issues, including scientific items of interest – member report (Agenda Item 15)

Request for advice from the United States

PICES has received a request for scientific advice on the recent climate-ocean changes observed in the North Pacific in 1998-1999 and their implications for fisheries. This is the first request ever for PICES to provide scientific advice to a member nation. The Committee agreed that this is an extremely important request, and a healthy initiative for PICES to undertake. It was also noted, that while the request was specific to the eastern North Pacific, international expertise is required to provide this advice. As such, the initiative is appropriate for PICES. It was suggested that this topic is important for the Atlantic region as well, and if PICES is able to provide this advice, it will help to develop future collaboration with ICES.

Korea asked for clarification between the scientific advice requested and the task undertaken by Working Group 16. Dr. Beamish acknowledged that there is some overlap, however this request is very specific to examining an event in the late 1990s.

There are six specific questions outlined in the request. FIS felt that all six questions are appropriate. Most of the information that is required to respond to this request is available from PICES experts and from PICES reports. The difficult task will be reaching a consensus on the advice and delivering the report. The process for providing the advice will be determined by PICES and consensus on the advice will not be required, but contrasting opinions will be reflected in the final product.

The process proposed by Science Board is to hold a workshop in June 2004, with the preparation of a draft report following the workshop. The final report will be presented at

the PICES Thirteenth Annual Meeting in October 2004. FIS supported this process and suggested that, as most work will need to be completed before the June 2004 workshop, a Study Group be established by January 2004, with a clear outline of the work required, assigned tasks and timelines.

FIS Best Presentation Award and Poster Award Committee

Following practices of previous years, the convenors of the FIS-sponsored sessions were

asked to make the selection. The 2003 FIS Best Presentation Award went to Yuki Minegishi (Ocean Research Institute, University of Tokyo, Japan) for her paper entitled “Definitive identification of all species of the genus *Anguilla* using the complete mitochondrial genome” (co-authored by J. Aoyama, J. Inoue, M. Miya, M. Nishida and K. Tsukamoto).

Dr. Elizabeth A. Logerwell served as a member on the Best Poster Award Committee.

FIS Endnote 1

Participation List

Members

Richard J. Beamish (Canada)
George W. Boehlert (U.S.A.)
Elena P. Dulepova (Russia)
Douglas E. Hay (Canada)
Elizabeth A. Logerwell (U.S.A.)
Yukimasa Ishida (Japan, Chairman)
Gordon H. Kruse (U.S.A.)
Takashi Minami (Japan)
Toshikuni Nakatani (Japan)
Laura Richards (Canada)
Xian-Shin Jin (China)
Chang-Ik Zhang (Korea)

Observers

Vera Alexander (PICES Chairman)
Kerim Aydin (U.S.A.)
Churchill Grimes (U.S.A.)
Glen Jamieson (Canada)
Masahide Kaeriyama (Japan)
Jacquelynn R. King (Canada, Rapporteur)
Richard J. Marasco (U.S.A.)
Gordon A. McFarlane (Canada)
Igor V. Melnikov (Russia)
Yeong Chull Park (Korea)
R. Ian Perry (Science Board Chairman)
Anatoly Semchenko (Russia)
Michael Schirripa (U.S.A.)
Akihiko Yatsu (Japan)
Inja Yeon (Korea)
Hak-Yoel You (Korea)
Thomas C. Wainwright (U.S.A.)

FIS Endnote 2

FIS Meeting Agenda

1. Welcome and introduction of new members
2. Approval of agenda
3. Review and discussion of the implementation of PICES XI decisions
4. Report of the WG 16 on *Climate change and fisheries* management
5. Proposals for new Working Groups
 - a. Joint FIS/MEQ Working Group on *Ecosystem-based management*
 - b. Joint FIS/MEQ Working Group on *Aquaculture*
6. Discussion of report from Study Group on *PICES Strategic Issues*
7. Discussion of *North Pacific Ecosystem Status Report*
8. Discussion of report from Study Group on *PICES Capacity Building*
9. Discussion of steps towards next major PICES scientific program(s)

10. PICES web site revisions – information for FIS web page
11. Items with financial implications
 - a. Proposed inter-sessional meetings (workshops, working groups, other)
 - b. Travel support requests
 - c. Proposed publications

12. Co-sponsored meetings and relations with other organizations
13. Topic session proposals for PICES XIII
14. PICES XIV theme
15. Other issues, including scientific items of interest - member reports
16. Draft of report and FIS recommendations to Science Board

FIS Endnote 3

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

The Working Group 16 met from 14:30-18:00 hours on October 11, 2003. The meeting was well attended with 17 participants representing all PICES member countries.

The goal of the meeting was to hear brief reports from each nation and to receive an update on the progress they have made on their final reports. Japan, Russia, China and Canada gave 10-minute presentations updating their information on biology and dynamics of key species, climate variability and potential impacts of climate change over the next 50 to 100 years. Korea will have a draft of their report ready in early November. The United States has not prepared a report, however, other participants felt that if a report is not forthcoming, there are regional reports which can be used in preparing the WG 16

final report. Once final drafts of all reports are received, Dr. Richard Beamish will prepare a draft of the complete report. This report will be distributed to all participants in February 2004 for review. The North Pacific Anadromous Fish Commission will also be invited to review the report because it includes salmon. The final report will be completed and submitted to FIS at PICES XIII in October 2004.

Other discussion focused on how best to disseminate the information contained in the report. Suggestions included:

- publish as a PICES Scientific Report;
- hold a ½-day Topic Session at PICES XIV;
- present at annual meetings of other international organizations (NPAFC, ICES, GLOBEC, etc.).

WG 16 Endnote 1

Participation List

Members

Richard J. Beamish (Canada, Co-Chairman)
 Elena P. Dulepova (Russia)
 Xian-Shi Jin (China)
 Jin Young Kim (Korea)
 Suam Kim (Korea)
 Jacquelynne R. King (Canada)
 Muneharu Tokimura (Japan)
 Chang-Ik Zhang (Korea)
 Akihiko Yatsu (Japan, Co-Chairman)

Observers

Gordon A. McFarlane (Canada)
 Jang-Uk Lee (Korea)
 Igor V. Melnikov (Russia)
 Svetlana Naydenko (Russia)
 Anatoly Velikanov (Russia)
 Konstantin Zgurousky (Russia)
 David L. Fluharty (U.S.A.)
 Karen Hyun (U.S.A.)