

## Report of Science Board

Science Board met on three different occasions in Khabarovsk, Russia. The first meeting was held from 12:30–14:00 on October 16, 2011 to adopt the draft agenda and review those items set for discussion at the luncheon meeting. Science Board Chairman, Dr. Sinjae Yoo, welcomed participants to the meeting and introductions were made (*SB Endnote 1*). One detail from the agenda item on proposed inter-sessional workshops/symposia was moved forward for discussion and agenda items on relations with specific international programs/organizations and report of the PICES/ICES SG on *Developing a Framework for Scientific Cooperation in Northern Hemisphere Marine Science* were deferred until the third meeting due to time constraints (*SB Endnote 2*). The second meeting was held after the Closing Session, from 15:00–18:00 on October 21, 2011. The agenda item on PICES-2012 was moved forward to be included in the second meeting. The third meeting was held from 9:00–18:00 on October 22, 2011 to complete the rest of the agenda.

### AGENDA ITEM 2

#### **Review of procedures for Science Board Symposium and session awards**

Procedures and protocols for determining best presentations for the Science Board Symposium and Topic/Paper sessions sponsored by each Committee/FUTURE Advisory Panel were discussed. Each Committee was responsible for judging its own sponsored session/workshop for the best oral or poster presentation. For multiple-sponsored sessions/workshops, the Science Board Chairman assigned one of the co-sponsoring Committees or FUTURE Advisory Panels to be responsible. Although the FUTURE Advisory Panels were tasked with judging an MEQ/FUTURE-sponsored topic session (S7), this was reassigned to the primary sponsor, MEQ, and it was agreed that FUTURE would not be presenting a certificate for a FUTURE-sponsored topic session this year. Assignments for judging were developed from what was proposed in the Science Board briefing book. Each chairman was responsible for judging (or delegating to judges) the eligible presentations made at the sessions/workshops relevant to his Committee/ FUTURE. Science Board agreed that, should the pool of eligible oral and poster presentations be small, or not of sufficient quality, there was no obligation to select a presentation for an award.

Science Board agreed that business meeting reports from Committees and their subsidiary bodies would be submitted to the Secretariat one month after the meeting.

### AGENDA ITEM 3

#### **Relations with specific international programs/organizations**

ICES was represented by Dr. Adolf Kellermann (Head, ICES Scientific Program) who apprised Science Board of ICES decisions and events related to PICES. ICES agreed to co-sponsor 3 topic sessions at PICES-2012 in Hiroshima, Japan (*Jellyfish in marine ecosystems and their interactions with fish and fisheries*, *Comparison of impact of multi-decadal climate variability in North Pacific and North Atlantic ecosystems and corresponding teleconnection patterns* [later rejected as a topic session by Science Board], *Anthropogenic CO<sub>2</sub> trends and their impacts on marine ecosystems in the North Pacific and its marginal seas* [later merged with *Trends in hypoxia and ecosystem impacts in the North Pacific to Changing ocean biogeochemistry and its ecosystem impacts*; see Agenda Item 10]), with the stipulation that PICES broaden the term “North Pacific” in the title and description for the latter topic session. PICES was invited to review ICES-approved theme sessions for its ASC in 2012, and 5 ICES-sponsored symposia scheduled for 2013 and 2014 for possible PICES co-sponsorship.

Two new working groups were selected by SCOR from a number of SCOR proposals in 2011 (Working Group on *Organic Ligands – A Key Control on Trace Metal Biogeochemistry in the Ocean* [WG 2.3.2] and Working Group on *Biogeochemical Exchange Processes at the Sea-Ice Interfaces (BEPSII)* [WG 2.3.7]). Science Board

members were requested to review them and discuss potential PICES affiliate membership at their Committee meetings (October 19) and provide feedback at the second Science Board meeting.

Science Board reviewed SCOR WG 137's request to hold a 3-day workshop at PICES-2012 and a request for PICES sponsorship by providing funding so the WG could complete the last 2 years of its 5-year term. Science Board agreed with the workshop but not with funding WG 137.

PICES received an invitation to participate in the 3<sup>rd</sup> Intergovernmental Review Meeting of the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities to be held January 25–27, 2012 in Manila, the Philippines. Science Board agreed that sending a participant was in the interest of PICES, given the potential for collaboration.

**Recommendation:**

- Science Board supports 3-day SCOR WG 137 co-sponsored workshop at PICES-2012.
- Science Board recommends Professor Ik Kyo Chung (MEQ) represent PICES at the 3<sup>rd</sup> Intergovernmental Review Meeting

AGENDA ITEM 4

**Status of proposed inter-sessional workshops/symposia**

Science Board discussed the feasibility of sending a scientist to participate in an IMBER/CLIOTOP special session on “*Global science for global governance of oceanic ecosystems and fisheries*” to be held at the Planet Under Pressure Conference in London in 2012. There was concern that PICES does not have an expert on top predators or the expertise in managerial governance. However, it was agreed that PICES was capable of offering scientific advice to management and that this event was a good opportunity to showcase FUTURE and PICES' activities on human dimensions. Science Board nominated Dr. Ian Perry (Canada) to represent PICES at the session, with Dr. Mitsutaku Makino (Japan) being an alternate choice

*Friday, October 21, 2011*

AGENDA ITEM 5 (CONTINUED)

**Status of proposed inter-sessional workshops/symposia**

*CLIOTOP*

Dr. Mitsutaku Makino agreed to present at the IMBER/CLIOTOP special session on “*Global science for global governance of oceanic ecosystems and fisheries*” in place of Dr. Ian Perry who would be unavailable to attend. Dr. Makino informed Science Board that the tentative theme and abstract prepared by Drs. Yoo and Thomas Therriault to meet the September 2011 abstract submission deadline was satisfactory, and requested that the author placeholder for the abstract be changed to be co-authored by Drs. Makino and Perry.

See Agenda 15 for discussion on IMBER ClimECO3.

AGENDA ITEM 6

**Status of proposed publications**

Science Board reviewed the status of the proposed list of PICES or PICES-sponsored publications and recommended that the Science Board Chairman request the U.S. national delegate, Dr. John Stein, to find out the reason for the delay in publishing the summary of activities of the Climate Forcing and Marine Ecosystem Response Task Team (CFAME) from the editor, Dr. Karim Aydin, and what could be done to move the

process forward. Science Board agreed it would be of value to the Organization to have both the CFAME and Climate Change and Carrying Capacity (CCCC) Program final reports published in order to document the history and progress PICES has made; a less desirable alternative would be to publish the materials that were already available.

SOFE-AP Chairman, Mr. Robin Brown, questioned if SOFE was responsible for peer reviewing such material as PICES Scientific reports. Science Board agreed that the reports were a record of expert groups, and acted as a historical archive for PICES, but decided that they could be published without peer review. Science Board approved publication of the final report of the Study Group on Human Dimensions (PICES Scientific Report No. 39) by editors Drs. Mitsutaka Makino and David Fluharty.

CREAMS-AP member, Dr. Kyung Ryul Kim, presented an overview of the CREAMS-AP supplementary chapter to the North Pacific Ecosystem Status Report, 2003–2008 prepared by a CREAMS-AP *ad hoc* committee formed specifically for this purpose, seeking approval for its publication. Science Board agreed that the supplement should be published as a valuable contribution to NPESR and that SOFE and MONITOR should review the chapters before the technical editing process. Although Science Board was urged to get the supplement published in 1 month, it was decided that quality would not be sacrificed for time, and that the timeline would be open-ended but would be published as soon as possible.

Mr. Brown informed Science Board that SOFE-AP was committed to publishing the brochures on *Ecosystem-based management science and its application to the North Pacific* and the North Pacific Ecosystem Status Report, 2003–2008 by ISB-2012. An English version of the NPESR brochure would be distributed to SOFE members for review, then other versions would be prepared for distribution to member countries. The successes and failures using this approach will be recorded.

**Action:**

- Science Board Chairman to talk to U.S. national delegate, Dr. John Stein, about status of CFAME final report and to former CCCC Co-Chairman, Dr. Harold Batchelder, about the status and editor responsible for completing the CCCC final report.

**Recommendation:** Science Board recommends publication of the CREAMS supplement to the NPESR.

AGENDA ITEM 7

**Implementation of Science Board recommendations and Governing Council decisions from PICES-2010**

Science Board looked at the outcome from the list of its recommendations from PICES-2010 approved by Council and noted three cases of cancellation (an Annual Meeting topic session, HAB training session venue, special issue of a primary journal) due to lack of interest/submissions. Other recommendations that did not take place or were delayed were discussed to determine the reasons (see Agenda Item 6)

AGENDA ITEM 8

**Reports from Scientific and Technical Committees**

Reports by Committee Chairmen were presented and specific details can be found in the Committee reports in the 2011 Annual Report. Only specific highlights are reported here.

*BIO*

BIO Committee Chairman, Dr. Atsuka Tsuda, informed Science Board that BIO:

- approved the terms of reference of the Advisory Panel on Marine Birds and Mammals, revised to align with FUTURE goals, and recommended extending MBM-AP for 3 years; Science Board agreed with the recommendation.

## SB-2011

- recommended the establishment of a study group on the feasibility of updating PICES Publication 14 on Prey Consumption by marine birds and mammals, with addition of prey consumption by large predatory fish in the PICES regions; Science Board did not accept the proposal for a study group, but instead, recommended that the proposed co-chairs for the study group, Drs. George Hunt and Hirohito Kato, hold a workshop to update data and to determine prey consumption by large predatory fish.
- Science Board recommended seeking IWC approval to accept a PICES observer (Hirohito Kato) ..

BIO Chairman, Dr. Atsushi Tsuda noted a number of points of concern to BIO. Specifically, he:

- requested TCODE and Working Group on *Comparative Ecology of Krill in Coastal and Oceanic Waters around the Pacific Rim* (WG 23) to discuss methods for setting up a website where published papers could be posted and references shared;
- questioned why BIO was asked to co-sponsor ½-day Topic Session on “*Ecosystem responses to multiple stressors in the North Pacific*” at PICES-2012 when there was no BIO member appointed to Working Group on *Development of Ecosystem Indicators to Characterize Ecosystem Responders to Multiple Stressors* (WG 28). SOFE Chairman, Mr. Robin Brown, added that BIO membership was underrepresented in FUTURE (only a single member across all three FUTURE Advisory Panels);
- expressed concern that terms of reference of WG 28 were too broad and ambitious for a 3-year term, and should be more focused. AICE Chairman, Dr. Thomas Therriault, highlighted the challenges in finalizing the Terms of Reference for this Working Group;
- requested better communication between FUTURE and BIO;
- stated that since BIO did not receive notification from POC about the establishment of a new Working Group on *Regional Climate Models* (WG 29) under POC and BIO, the Committee suspended its decision on supporting this group.

In regard to PICES affiliate membership in SCOR Working Groups 2.3.2 and 2.3.7 (see Agenda Item 3), Dr. Tsuda proposed to ask a Japanese SCOR member to report to PICES on SCOR activities.

### Recommendations:

- extend MBM-AP for 3 years;
- the proposal to establish a study group on updating Publication 14 be dealt with by having a workshop at PICES-2012.

### Action:

- BIO to provide comments on WG 28 terms of reference at the inter-sessional FUTURE SSC meeting;
- revisit potential co-sponsorship by BIO in POC-sponsored WG 29 at ISB-2012.

### FIS

FIS Committee Chairman, Dr. Mikhail Stepanenko, reported that the FIS Committee received no proposals for working groups but strongly supported BIO's recommendation to form a study group on predator-prey interactions. FIS also strongly supported the proposal for FIS to co-sponsor the new Section on *Climate Change Effects on Marine Ecosystems* (S-CCME), given the strong ties of this work to FIS. FIS supported the extension of Working Group on *Environmental Interactions on Marine Aquaculture* (WG 24) for 1 year to complete its final report due to a number of challenges the Working Group has faced in trying to meet its terms of reference. It was agreed to form a small FIS subcommittee, composed of Drs. Libby Logerwell and Gordon Kruse, to revise and update the 2007 FIS Action Plan in order to align it with FUTURE goals.

### MEQ

MEQ Committee Chairman, Dr. Steven S. Rumrill, summarized activities of the Working Group on *Non-indigenous Aquatic Species* (WG 21). It has been in existence for 6 years and is wrapping up its NIS database project and global atlas. The atlas was peer reviewed and MEQ recommended its publication but requested

input from Science Board as to what format it should take. It was agreed that the atlas should be electronic and that SOFE-AP would highlight it in a brochure as a FUTURE product. Dr. Rumrill stated that the USGS was willing to host the NIS database, but suggested that this be done jointly with PICES. Another suggestion was that TCODE (or IODE) work with Dr. Deborah Reusser to resolve the interface–end user stabilization issue.

HAB-S was making progress on compiling a PICES/ICES HAE-DAT, but complained that China was the only PICES country not submitting HAE-DAT reports, and requested PICES help identify a new contact person in China in order to acquire data. An action item at ISB-2011 was for HAB-S to revise its terms of reference by PICES-2011 to better align its goals with FUTURE. However, MEQ and Science Board agreed that they need further revision to broaden its scope and meet FUTURE requirements as the update provided at PICES-2011 was inadequate.

MEQ supported the extension of WG 24 for 1 year to complete its terms of reference and to hold a final business meeting at PICES-2012.

MEQ proposed the establishment of a Study Group on *Marine Pollutants* to identify novel or promising approaches to monitoring pollutant trends over space and time, and to evaluate impacts on biota at the population level in PICES member countries.

**Recommendations:**

- extend WG 24 for 1 year to complete its TOR;
- publication of an electronic NIS Atlas; SOFE-AP to produce an accompanying brochure

**Action:**

- HAB-S to have its terms of reference further revised by the end of 2011 for review at ISB-2012.

*POC*

POC Committee Chairman, Dr. Kyung-Il Chang, proposed the establishment of a Working Group on *Regional Climate Modeling* to assess state-of-the-art regional climate modeling efforts, their implications for regional ecosystem studies and to further their development in the North Pacific Ocean and its marginal seas. Science Board felt this working group would be a good match with FUTURE and would feed into the proposed Section on *Climate Change Effects on Marine Ecosystems*, and thus supported the proposal. Science Board also suggested that the working group be discussed again at ISB-2012 in order for BIO to voice its opinion if it would like to act as a co-sponsor. Science Board also supported POC's request to publish a special issue dedicated to the late Dr. Bernard Megrey (formerly a member of CCCC program, MODEL Task Team and Chairman of TCODE) in the Journal of Marine Systems for 2013.

In regard to PICES affiliate membership in SCOR Working Groups 2.3.2 and 2.3.7 (see Agenda Item 3), Dr. Chang proposed to ask SCOR WG 2.3.7 member, Dr. Lisa Miller, to report to PICES on SCOR activities.

**Action:** POC Chairman to ask Dr. Lisa Miller to report to PICES on SCOR WG 2.3.7 activities.

*MONITOR*

MONITOR Committee Chairman, Dr. Hiroya Sugisaki, reviewed MONITOR events of the past year and reported that MONITOR was in active communication with Dr. David Checkley, representing PICES on the Framework for Ocean Observing Task Team (TT-FOO). Although the TT focuses mainly on physical and lower trophic level biological EOVS (essential ocean variables), as measured in pelagic locations, MONITOR suggested that Dr. Checkley encourage the TT to also focus on developing biological and chemical EOVS in benthic-to-surface locations that are relevant to understanding productivity of higher trophic level organisms.

MONITOR recommended that PICES continue to support and participate in the Framework for Ocean Observing.

Dr. Sugisaki stated that there was little communication between ICES-GOOS related working groups (Working Group on *Oceanic Hydrography* and Working Group on *Operational Oceanographic Products for Fisheries and the Environment*) and MONITOR so far, but that the Committee was open to sending a representative to their meetings.

#### *TCODE*

TCODE Committee Chairman, Dr. Toru Suzuki, informed Science Board that TCODE was engaged in communications with several international organizations relevant to TCODE, including OBIS (Ocean Biogeographic Information System) and has extended an invitation to IODE's Study Group/Group of Experts on OBIS for a member to become an *ex-officio* member of TCODE.

Dr. Suzuki requested funds to continue renting a remote server for PICES TCODE geo-spatial portal site. As requested by the BIO and MEQ Chairmen, to work with WG 23 and WG 21, respectively, Dr. Suzuki agreed that TCODE would discuss methods or provide advice to WG 23 for setting up a website for the Group to share data and publications, and to work with Dr. Deborah Ruesser (WG 21) to try to establish a simplified user/database interface for the NIS Atlas.

#### **Action:**

- TCODE to discuss setting up a website with WG 23
- TCODE to work with Dr. Ruesser on the NIS atlas/database interface

#### *Additional Science Board recommendations*

As a result of further discussions at the meeting, a summary of Science Board recommendations to Governing Council is provided below.

#### **Changes in Chairmanship**

- Dr. Won-Duk Yoon (Korea) to replace Dr. Young-Shil Kang as Co-Chair (Working Group on *Jellyfish Blooms around the North Pacific Rim: Causes and Consequences* (WG 26))
- Dr. Libby Logerwell (USA) to replace Dr. Mikhail Stepanenko as FIS Chair
- Dr. Xianshi Jin (China) to replace Dr. Gordon Kruse as FIS Vice-Chair

#### **Proposed new expert groups**

- Study Group on *Marine Pollutants* (Parent Committee: MEQ);
- Working Group on *Regional Climate Models* (WG 29) (Parent Committee: POC (and possibly BIO))
- Section on *Human Dimensions of Marine Systems* (Parent: Science Board)
- Section on *Climate Change Effects on Marine Ecosystems* (Parent: Science Board [later changed to Parent Committees of BIO, FIS and POC])

#### **Inter-sessional symposia/sessions/workshops/meetings**

Joint theme sessions at the ICES Annual Science Conference, September 17–21, 2012, Bergen, Norway

- Theme Session A: “*Understanding, measuring and projecting the limits of resilience in marine ecosystems*”;
- Theme Session I: Multidisciplinary perspectives in the use (and misuse) of science and scientific advice in Marine Spatial Planning
- Theme Session Q: “*Sustainability of aquaculture*”.
- Theme Session M: “*Subarctic-Arctic interactions: Ecological consequences*”.

#### Workshops/meetings

- PICES/MAFF Project Synthesis Workshop, March 21–23, 2012 Newport, OR, USA;
- Marine Ecosystem Model Inter-comparison Project (MEMIP) Workshop, spring 2012, Corvallis, U.S.A.;
- FUTURE Implementation Workshop, May 22–24, 2012, Busan, Korea;
- Inter-sessional Science Board Meeting, May 24-25, 2012, Busan, Korea;
- ICES/PICES/GEOHAB workshop on “*Climate change and harmful algal blooms*”, in conjunction with the meeting of the ICES Working Group on *Harmful Algal Bloom Dynamics*, spring 2012, TBD;
- SCOR WG 137 workshop on “*Global patterns of phytoplankton dynamics in coastal ecosystems: Comparative analysis of time series observations*” (co-sponsored by PICES), October 2012, prior to PICES-2012, Hiroshima, Japan.

#### Capacity building

- PICES/MAFF Workshop on “*Introduction to Rapid Assessment Survey methodologies for detecting non-indigenous marine species*” (co-sponsored by FRA, NOWPAP and WESTPAC), February 8–9, 2012, Nagasaki, Japan;
- PICES/MAFF training course on screening methods for testing shellfish for paralytic shellfish poisoning toxins and phytoplankton identification, February 17–22 (Jakarta) and February 23–24 (Lombok Island), 2012, Indonesia;
- PICES/MAFF Harmful Algal Bloom workshop to review data collected by High Performance Liquid Chromatography and Mass Spectrometry methods, and to provide outreach for the project, March 5–9, 2012, Guatemala;
- Second ICES/PICES Conference for Early Career Scientists on “*Oceans of Change*”, April 24–27, 2012, Calvià, Majorca, Spain;
- IMBER Workshop on “*Needs assessment for capacity development for integrated marine biogeo-chemistry and ecosystem research in the Asia-Pacific region*” (co-sponsored by PICES), June 2012, Shanghai, China;
- IMBER-led international ClimECO3 Summer School on “*A view towards Earth System models: Human-natural system interactions in the marine world*” (co-sponsored by PICES), July 23–28, Ankara, Turkey.

#### Priority items with funding implications

PICES-2012, October 12–21, 2012, Hiroshima, Japan

- Invited speakers for Science Board Symposium and Topic Sessions, with the normal allocation of approximately \$5,000 per Committee/Program;
- 1 invited speaker for each of the PICES-2012 workshops.

#### Inter-sessional events

- MEQ representative to participate in the 3<sup>rd</sup> Intergovernmental Review Meeting of the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, January 25–27, 2012, Manila, Philippines;
- TCODE representative to attend the IODE SG-ODP (IOC/IODE Study Group for the Ocean Data Portal) meeting, February 20–22, 2012, Oostende, Belgium;
- PICES representative to participate in the workshop on “*Salmon ocean ecology*”, March 20–22, 2012, Newport, U.S.A.;
- PICES invited speaker for the CLIOTOP special session “*Global science for global governance of oceanic ecosystems and fisheries*” at the Planet Under Pressure Conference, March 26–29, 2012, London, UK;
- TCODE representative to attend the IODE GE-BICH (IOC/IODE Group of Experts on Biological and Chemical Data Management and Exchange Practices) meeting, March 26–30, 2012, Oostende, Belgium;
- S-HAB representative to participate in the planning meeting for the ICES/PICES/GEOHAB workshop on “*Climate change and harmful algal blooms*”, early 2012, venue TBD;
- POC/WG 27 representative to attend the CLIVAR Pacific Implementation Panel meeting, April 29–May 1, 2012, Noumea, New Caledonia;

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- PICES convenor for the workshop on “*Climate change projections for marine ecosystems: Best practice, limitations and interpretation*”, May 13–14, 2012, Yeosu, Korea;
- PICES representatives/convenors for the joint sessions to participate in the ICES Annual Science Conference, September 17–21, 2012, Bergen, Norway;
- PICES representative (S-CC) to participate in the 3<sup>rd</sup> International Symposium on “Oceans in high-CO<sub>2</sub> world”, September 24–27, 2012, Monterey, U.S.A.;
- PICES convenor for the International Symposium on “*Forage fish interactions: Creating the tools for ecosystem based management of marine resources*” (November 8–12, 2012, Nantes, France).

### Facilities

- Renew rent of a remote server for PICES TCODE geo-spatial portal site

### Publications

#### Special issues of primary journals (2012–2013)

- *Aquaculture Economics and Management* (2012, Guest Editor: M. Pang) selected papers for a special issue from the PICES-2010 Topic Session on “*Economic relation between marine aquaculture and wild capture fisheries*”;
- *ICES Journal of Marine Science* (2012, Guest Editors: J. Keister, C. Johnson, and D. Bonnet), special issue based on selected papers from the 2011 PICES/ICES Zooplankton Production Symposium on “*Population connections, community dynamics and climate variability*”;
- *Reviews in Fish Biology and Fisheries* (2012, Lead Author: S. McKinnell), review paper on “The decline of Fraser River sockeye salmon in relation to marine ecology”;
- *Nature* (2012, Lead author: A. Hollowed), synthesis paper from the 2010 PICES/ICES/FAO Symposium on “*Forecasting climate change impacts on fish and fisheries: Forecasting impacts, assessing ecosystem responses, and evaluating management strategies*”;
- *Journal of Marine Systems* special issue on modeling dedicated to Dr. Bernard Megrey (May 2013, Guest Editors: E. Curchitser and S.I. Ito);
- *ICES Journal of Marine Science* (2013, Guest Editors: TBD) selected papers for a special issue from the 2012 Second International Symposium on “*Effects of climate change on the world’s oceans*”.

#### PICES Scientific Report series

- Final report for the Climate Change and Carrying Capacity Program (Editor: H. Batchelder);
- PICES Advisory Report to the Cohen Commission on “The decline of Fraser River sockeye salmon in relation to marine ecology” (Editor: S. McKinnell) – to be reproduced from web-based Cohen Commission Technical Report No. 4;
- Final report of the Working Group on *Forecasting Climate Change Impacts on Fish and Shellfish* (Editors: A. Hollowed and S. Kim);
- Final report of the Study Group on *Human Dimensions* (Editors: M. Makino and D.L. Fluharty);
- Final report of the Working Group on *Iron Supply and its Impact on Biogeochemistry and Ecosystems in the North Pacific Ocean* (Editors: F. Chai and S. Takeda);
- Final report of the Working Group on *Comparative Ecology of Krill in Coastal and Oceanic Waters around the Pacific Rim* (Editor: W. Peterson);
- Final report of the Working Group on *Environmental Interactions of Marine Aquaculture* (Editors: K. Abo, I. Burgetz, B. Dumbauld and S. Johnson)

#### Other publications

- Atlas of non-indigenous marine and estuarine species in the North Pacific (Editors: H. Lee II and D. Reusser) to be a web publication;
- Brochures and slide decks based on the final report of the MEQ Working Group on *Ecosystem-based Management Science and its Application to the North Pacific* (PICES Scientific Report, 2010, No. 37, 166 pp.), the Second North Pacific Ecosystem Status Report (PICES Special Publication, 2010, No. 4, 393 pp.) and the final report of the PICES/MAFF project on “*Development of the prevention systems for harmful organisms’ expansion in the Pacific Rim*” (March 2012);



- Supplementary chapter for the Second North Pacific Ecosystem Status Report 2003–2008 (PICES Special Publication No. 4).

*Saturday, October 22, 2011*

AGENDA ITEM 9

**Report on Study Group on *Human Dimensions***

The Chairman of the Study Group on *Human Dimensions* (SG-HD), Dr. Mitsutaku Makino, presented the outcome of PICES sending an observer to attend the Land-Ocean Interactions in the Coastal Zone (LOICZ) Open Science Conference September 12–15, 2011 in Yanti, China. SG-HD member, Dr. Masahito Hirota, attended the meeting on behalf of PICES to collect information about how LOICZ deals with the human dimension on its coastal issues, and to seek possible collaborations with the organization. In October 2011, Drs. Makino and Hirota met with SSC member, Dr. Masumi Yamamuro to discuss how LOICZ and PICES might work together.

Dr. Makino felt that collaboration with LOICZ would allow PICES to obtain information and suggestions for “comparing” and “scaling up” North Pacific ecosystem studies to global scales, would benefit early career scientists in both organizations to communicate and interact with each other, and would allow PICES to draw on the rich source of anthropologists from LOICZ as potential members of the proposed Section on *Human Dimensions of Marine Systems*. Science Board agreed that if the Section were formed, LOICZ expertise would act as a good supplement, and that time could be saved in FUTURE by tying in with ongoing LOICZ activities.

**Recommendation:** Science Board supports collaboration with LOICZ and the establishment of a Section on *Human Dimensions of Marine Systems*

AGENDA ITEM 10

**PICES-2012, Hiroshima, Japan, theme and description, draft schedule of scientific sessions and workshops**

Science Board agreed, in principle, with the proposed theme for PICES-2012, “*Effects of natural and anthropogenic stressors in the North Pacific ecosystems: Scientific challenges and possible solutions*”, to be held in Hiroshima, Japan, from October 12–21, 2012. The following sessions and workshops, by order of Committee, were recommended to be convened.

¾-day Science Board Symposium

*Effects of natural and anthropogenic stressors in the North Pacific ecosystems: Scientific challenges and possible solutions*

1-day BIO Contributed Paper Session

1-day BIO/FIS Topic Session

*Jellyfish in marine ecosystems and their interactions with fish and fisheries* [co-sponsored by ICES]

1-day BIO/POC/FIS/MEQ Topic Session [revised to ½ day and later co-sponsored by BIO/FIS/POC]

*Advances in understanding the North Pacific Subtropical Frontal Zone ecosystem*

1-day BIO/MEQ Topic Session [revised to ½ day]

*Environmental contaminants in marine ecosystems: seabirds and marine mammals as sentinels of ecosystem health*

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1-day BIO/MEQ Topic Session [revised to ½ day]  
*Ecosystem responses to multiple stressors in the North Pacific*

1-day BIO Workshop  
*Secondary production: measurement methodology and its application on natural zooplankton community*

½-day BIO Workshop (co-sponsored by ESSAS) [revised to 1 day]  
*Subarctic–Arctic interactions*

1-day BIO Workshop  
*Prey consumption by marine birds, marine mammals, with the addition of prey consumption by large predatory fish in the PICES regions*

1-day BIO/MEQ Workshop  
*Identifying critical multiple stressors of North Pacific marine ecosystems and indicators to assess their impacts*

1-day FIS Contributed Paper Session

½-day FIS Topic Session  
*Monitoring on a small budget: Cooperative research and the use of commercial and recreational vessels as sampling platforms for biological and oceanographic monitoring*

½-day FIS/MEQ Topic Session  
*Abundance, ecological functions and ecosystem service of macrophyte vegetations as indicators of natural and anthropogenic stressors in coastal ecosystem and productivity*

1-day MEQ/FIS Topic Session  
*Social-ecological systems on walleye pollock under changing environment: an inter-disciplinary approach*  
[later renamed to “*Social-ecological systems on walleye pollock and other commercial gadids under changing environment: An inter-disciplinary approach*”]

½-day MEQ Topic Session  
*Range extension, toxicity and phylogeny of epiphytic dinoflagellates*

1-day MEQ/ FUTURE Topic Session [later revised to ½ day]  
*Risk management in coastal zone ecosystems around the North Pacific*

1½-day MEQ Workshop  
*The contrasting cases of HABs in the eastern and western Pacific in 2007 and 2011*

1-day POC Contributed Paper Session

1-day POC/FUTURE Topic Session (co-sponsored by CLIVAR [changed later to POC/CLIVAR/ICES])  
*Challenges in understanding North Pacific climate variability and change* [later changed to “*Challenges in understanding Northern Hemisphere ocean climate variability and change*”]

½-day POC/FIS Topic Session  
*Linking migratory fish behavior to End-to-End models II*

½-day BIO/POC/FIS Workshop (co-sponsored by ESSAS)  
*Marine Ecosystem Model Intercomparison Project* [revised to 2 days and renamed as “*Comparison of multiple ecosystem models in several North Pacific shelf ecosystems (MEMIP-IV)*”]

½-day POC/BIO/TCODE Topic Session

*Trends in hypoxia and ecosystem impacts in the North Pacific* [later merged with POC/BIO proposal on “*Anthropogenic CO<sub>2</sub> trends and their impacts on marine ecosystems in the North Pacific and its marginal seas to become a 1-day Topic Session on Changing ocean biogeochemistry and its ecosystem impacts*”]

1-day MONITOR Topic Session

*Effects of natural and artificial calamities on marine ecosystems and the scheme for their mitigation*

AGENDA ITEM 11

**Report of the PICES/ICES Study Group on *Developing a Framework for Scientific Cooperation in Northern Hemisphere Marine Science***

A draft report prepared by the members of the PICES/ICES Study Group on *Developing a Framework for Scientific Cooperation in Northern Hemisphere Marine Science* was sent by the Secretariat to Governing Council and Science Board September 21, 2011, with an explanation that the draft had been discussed at the SCICOM meeting held during the 2011 ICES Annual Science Conference (with PICES Study Group members, Drs. Sinjae Yoo and Skip McKinnell attending the meeting) and then had been circulated with ICES for further comments. Because there was little time for Science Board to review the report before the PICES Annual Meeting, the Science Board Chairman requested the Secretariat to send a reminder to all Committee and FUTURE Chairmen to circulate the report to their members for review and comments by mid-November. Any comments or changes received from Governing Council and Science Board would then be reviewed by PICES SG-SP members (Drs. Yoo, McKinnell, Hiroaki Saito and Thomas Therriault) who would then make the appropriate changes. The new version of the report will then be placed on the PICES website for one last review by the broader PICES scientific community before finalization.

**Action:** Committee Chairmen and their members to review draft report, and provide comments by mid-November

AGENDA ITEM 12

**Status of planning for PICES-2013**

In keeping with the 6-year rotation of PICES member countries (Decision 94/A/6), Canada agreed to host PICES-2013 in Nanaimo, Canada. The title of the theme “*Communicating forecasts, uncertainty and consequences of ecosystem change to society*” was provided to Science Board at the Annual Meeting. A description of the theme will be provided at a later date.

AGENDA ITEM 13 (CONTINUED)

**Relations with specific international programs/organizations**

Science Board reviewed the 2010–2011 standing list of international and regional organizations and programs and agreed with the Secretariat’s decision to remove or add certain names. The Yellow Sea Large Marine Ecosystem Project has terminated and Science Board recommended its removal.

AGENDA ITEM 14

**Possible PICES-sponsored conferences/symposia in 2013 and beyond**

No decisions were made regarding possible PICES-sponsored conferences/symposia in 2013 and beyond except for a potential FUTURE Open Science Meeting (see FUTURE SSC Agenda Item 3).

AGENDA ITEM 15

**Capacity building/Plan for PICES summer schools**

*PICES/ICES Early Career Scientists Conference*

Dr. Skip McKinnell, PICES Coordinator for the 2012 PICES/ICES Early Career Scientists Conference on “*Oceans of change*” (April 24–27, 2012, Calvià, Majorca, Spain) reported that preparations were progressing well. The Scientific Steering Committee, composed of 3 PICES and 4 ICES early career scientists, had selected invited speakers. Participation will be by invitation only from the SSC, based on specific eligibility criteria, and it is anticipated that 90 to 110 early career scientists will be invited.

*PICES Summer School*

Dr. Rumrill announced that two proposals for a PICES Summer School in 2012 were submitted by the U.S. delegation to the PICES Secretariat for discussion and approval by Science Board and Governing Council. The venue will be held at the Hatfield Marine Science Center at Oregon State University. Science Board recommended that the proposal on ocean observing systems and on time-series datasets be combined into a 1-week-long session. Dr. Rumrill added that the organizers were looking into the possibility of getting NOAA ship time for a field cruise.

*PICES-sponsored Summer School*

Science Board reviewed IMBER’s request for PICES to co-fund a third IMBER Summer School, ClimECO3 on “*A view towards integrated earth system models – Human-nature interactions in the marine world*” to take place July 23–28, 2012 in Ankara, Turkey, which will include the human dimension in end-to-end food web modelling. Science Board agreed to give its support, as the summer school theme was well aligned with PICES’ interests. However, Science Board wanted to ensure that PICES receives a product, such as an article in the PICES Press newsletter, if it is to co-sponsor the summer school.

*IMBER-sponsored workshop on capacity building*

Science Board reviewed the proposal to PICES on an International Workshop on “*Needs assessment for capacity development for integrated marine biogeochemistry and ecosystem research in the Asia-Pacific region*” to be held in June 2012 in Shanghai, China. Science Board agreed the request for \$5,000 was reasonable and assigned moderate importance to its support.

**Recommendations:**

- Science Board supports the proposal for a PICES Summer School to be held in the USA
- Science Board supports co-sponsoring ClimECO3 as a moderate priority, to be based on the availability of funds
- Science Board supports the IMBER-sponsored workshop in Shanghai, China, as moderate importance

AGENDA ITEM 16

**Venue and dates of ISB-2012**

Science Board agreed that there was a need to hold an inter-sessional Science Board meeting in 2012 because of the increase in PICES business, including Science Board duties as a Scientific Steering Committee for FUTURE. Science Board agreed that a third FUTURE workshop should be held in conjunction with the inter-sessional meeting after the PICES/ICES/FAO Symposium on “*Effects of climate change on the world’s oceans*” (Yeosu, Korea, May 15–19, 2012) at a venue close by.

**Recommendation:** Science Board to hold a 4-day FUTURE workshop and ISB-2012 meeting in Busan after the Yeosu symposium.

## AGENDA ITEM 17

**Other business**

MONITOR Chairman, Dr. Hiroya Sugisaki informed Science Board that Japan wished to express its gratitude for funds collected by PICES, ICES and JSFO that were donated to the Japanese government for fisheries and oceanographic research on the recovery from the Great East Japan Earthquake. Eleven projects were able to be developed from the donations.

## FUTURE SSC AGENDA ITEM 1

**Presentation and discussion of current status of the FUTURE Advisory Panels**

AICE-AP Chairman, Dr. Thomas Therriault, and SOFE-AP Chairman, Mr. Robin Brown, presented their reports to Science Board (COVE-AP Chairman, Dr. Hiroaki Saito, was unable to attend the Annual Meeting). Dr. Therriault stated that FUTURE still faced a number of challenges, one of which was the lack of participation at the AICE-AP business meeting for a second year in a row (although two members were unable to attend this year due to logistical reasons). Although SOFE-AP had good representation and participation, both Chairmen suggested a review of FUTURE membership, as Chinese attendance was still lacking in AICE, and there was underrepresentation from BIO Committee members. China's representative at the meeting, Prof. Mingyuan Zhu, offered to present a list of Chinese candidates recommended by AICE and SOFE to SOA/CAFS leadership for consideration. Dr. Therriault also stressed the challenge of FUTURE having better communication with Committees. One way might be for expert groups to report to joint FUTURE Advisory Panel meetings, then to the individual Advisory Panel meetings, after which a summary report would be prepared for discussion at the Committee level.

Dr. Therriault also felt a framework or "roadmap" would be highly desirable to develop a detailed plan for FUTURE to follow. As more working groups continue to be added, it will become necessary for FUTURE to have a clear plan when it begins to compile data arising from them over the next few years. FUTURE could also take the opportunity to listen to experts who come to the Annual Meeting to identify emerging issues. It was agreed that a roadmap would be developed at the inter-sessional Science Board meeting. Committee Chairmen were advised to work with their Committees on providing draft Action Plans for the proposed Inter-sessional Science Board meeting in the spring of 2012. Mr. Brown requested all Committees and their subsidiary bodies think about what products they wanted to assemble for status, outlooks, forecasting and engagement in order for FUTURE to evaluate what was going well and what needs working on.

**Action:**

- AICE, SOFE Chairmen to provide Prof. Mingyuan Zhu with a list of potential Chinese candidates for membership;
- Committees and their subsidiary bodies to consider specific products to be assembled for FUTURE for discussion at the FUTURE workshop in Busan;
- Secretariat to compile an attendance list history of FUTURE AP members for Advisory Panel Chairmen to review.

## FUTURE SSC AGENDA ITEM 2

**Status of new expert groups**

Expert groups established since PICES-2010 include the Working Group on *Development of Ecosystem Indicators to Characterize Ecosystem Responses to Multiple Stressors* (WG 28; approved at ISB-2011 and established by Council June 2011), Working Group on *North Pacific Climate Variability and Change* (WG 27; approved at ISB-2011 and established by Council June 2011), Section on *Climate Change and Marine Ecosystems* (S-CCME; approved at PICES-2011), and Section on *Human Dimensions of Marine Systems* (S-HD; approved at PICES-2011). As it was too early to review the status of any of these groups, it was agreed to

## **SB-2011**

include them as key participants in development of the FUTURE roadmap at ISB-2012. However, in the meantime, S-HD would be particularly well suited to helping SOFE-AP identify audiences for FUTURE products.

### FUTURE SSC AGENDA ITEM 3

#### **Potential FUTURE inter-sessional workshop**

For discussion and recommendation on a FUTURE inter-sessional workshop, see Agenda Item 16. In addition to holding a workshop, Science Board also debated where and when to hold a FUTURE Open Science Meeting (OSM) to showcase its products to date. Two options were put forth: (1) hold the OSM as a standalone meeting or (2) hold it as an extension of the Science Board Symposium at PICES-2013. As the benefits and consequences for each option still needed to be looked at more closely, Science Board opted to deal with this topic at ISB-2012.

**Action:** Science Board to decide OSM time and venue at ISB-2012

### FUTURE SSC AGENDA ITEM 4

#### **FUTURE website**

As FUTURE matures, Science Board discussed the need for a well designed website to showcase FUTURE products. The website would make products available both to the public as well as serving members internally. Dr. Yoo asked TCODE to establish a rudimentary website, and assist the Secretariat with the technical aspects of running it. Once designed, the Secretariat would maintain it. However, it was pointed out that if the Secretariat is to be involved, requirements of Secretariat must be clearly articulated in order not to overload its limited capacity. Mr. Brown stated that he would ask the North Pacific Research Board to help with the design. TCODE member, Dr. Igor Shevchenko, had indicated that he would act as the contact between SOFE-AP and TCODE to effect smooth transition of information. Science Board recommended that he gather information/comments from Committees and subsidiary bodies on structure, contents, organization, and what they would like to see posted. Once the survey has been conducted a FUTURE website can then be constructed.

**Action:** Dr. Shevchenko to conduct website survey among Committees/subsidiary bodies and have results ready for discussion at ISB-2012

### FUTURE SSC AGENDA ITEM 5

#### **Report of Study Group on Updating the PICES Strategic Plan**

The FUTURE SSC recommended that all Standing Committees have their Action Plans prepared for review at ISB-2012.

### FUTURE SSC AGENDA ITEM 6

#### **Other business**

None.

**SB Endnote 1****Science Board participation list**Members

Robin Brown (SOFE-AP)  
 Kyung-Il Chang (POC)  
 Steve Rumrill (MEQ)  
 Mikhail Stepanenko (FIS)  
 Hiroya Sugisaki (MONITOR)  
 Toru Suzuki (TCODE)  
 Thomas Therriault (AICE-AP)  
 Atsushi Tsuda (BIO)  
 Sinjae Yoo (Science Board Chairman)  
 Mingyuan Zhu (alternate, China)

Secretariat

Alexander Bychkov (PICES)  
 Skip McKinnell (PICES)

Observers

Masahito Hirota (SG-HD)  
 Adolph Kellermann (ICES)  
 Kyung-Ryul Kim (CREAMS-AP)  
 Mitsutaka Makino (SG-HD)

**SB Endnote 2****Science Board meeting agenda**

*Sunday, October 16, 2011 (12:30 – 14:00)*

1. Welcome and adoption of agenda (Yoo)
2. Review of procedures for Science Board Symposium and Session awards, and Closing Session (Yoo, McKinnell)
3. Relations with specific international programs/organizations (Yoo, international organization representatives)
4. Status of proposed inter-sessional workshops/symposia

*Friday, October 21, 2011 (15:00 – 18:00)*

5. Status of proposed inter-sessional workshops/symposia (continued)
6. Status of proposed publications (Secretariat)
7. Implementation of Science Board recommendations and Governing Council decisions from PICES-2010 (Yoo)
8. Reports from Scientific and Technical Committees (Committee Chairs)

*Saturday, October 22, 2011 (09:00 – 18:00)*

9. Report on Study Group on *Human Dimensions* (Makino)
10. PICES-2012, Hiroshima, Japan, theme and description, draft schedule of scientific sessions and workshops (All)
11. Report of the PICES/ICES SG on *Developing a Framework for Scientific Cooperation in Northern Hemisphere Marine Science* (Yoo/McKinnell)
12. Status of planning for PICES-2013 (Secretariat)
13. Relations with specific international programs/organizations (continued, Yoo, international organization representatives)
14. Possible PICES-sponsored conferences/symposia in 2013 and beyond
15. Capacity building/Plan for PICES summer schools in 2012 and 2013 (Yoo and McKinnell)
16. Venue and dates of ISB-2012 (Secretariat)
17. Other business

**SB-2011**

- FUTURE SSC 1. Presentation and discussion of current status of the FUTURE APs
- FUTURE SSC 2. Status of new expert groups (All)
- FUTURE SSC 3. Potential FUTURE inter-sessional workshop
- FUTURE SSC 4. FUTURE website
- FUTURE SSC 5. Report of Study Group on Updating the PICES Strategic Plan (SG-USP) – Alignment with FUTURE (Yoo, Bychkov)
- FUTURE SSC 6. Other business (All)