

REPORT OF SCIENCE BOARD

The Science Board met from 12:30–14:00 on October 28, 2007, to review the agenda and to discuss items related to the upcoming scientific sessions at the Annual Meeting and other topics. An Open Science Forum on the next integrative science program of PICES, FUTURE (Forecasting and Understanding Trends, Uncertainty and Responses of North Pacific Marine Ecosystems), version 4.2, was held November 1 from 17:30–18:30. On November 3, the Study Group on the *Future Integrative Science Plan* met for a 1-day workshop to review and discuss comments received from the PICES Committees/Program and broader community and to discuss tasks and schedules of the final draft. Science Board reconvened November 4 from 9:00–17:30 to address the remainder of the agenda. Ms. Rosalie Rutka served as rapporteur for the Science Board meetings (See *SB Endnote 1* for a list of participants).

October 28, 2007

Science Board Chairman, Dr. Kuh Kim, welcomed members and guests and called the meeting to order. The agenda was discussed and adopted as presented in *SB Endnote 2*.

Review of procedures for Science Board Symposium and Session awards and Closing Session (Agenda Item 2)

Science Board agreed that one Best Oral and one Best Poster Presentation Award would be given by each Committee/Program Chairman (the exception being the MONITOR and TCODE Committees, which would split the Best Oral and Best Poster Presentation awards), regardless of the number of Topic/Contributed Papers Sessions sponsored. Committee/Program Chairmen would select Best Oral Presentation recipients who were early career scientists from these sessions. The Science Board Symposium Best Oral Presentation Award would be open to

everyone, as would Best Poster Presentation Awards for all sessions. Each Chairman was responsible for selecting the award recipients.

The Closing Session would consist of a brief summary by the Science Board Chairman of how eligibility for the awards was determined, followed by presentations of awards from each Committee and Program. It was agreed that Committee/Program Chairmen would encourage award recipients to remain for the Closing Session.

Relations with specific international programs/organizations (Agenda Item 3)

Invited observers, Dr. Francisco E. Werner (Chairman of GLOBEC Scientific Steering Committee), R. Ian Perry (Chairman of GLOBEC Scientific Steering Committee as of January 1, 2008) and Dr. Adolf Kellermann (Head, ICES Science Programme) gave presentations on their respective organizations. Drs. Perry and Kellermann invited PICES to co-sponsor various events. Dr. Bjørn Sundby (President, SCOR Executive Committee) invited PICES to be involved in a SCOR Working Group and to partner with SCOR in capacity building by establishing an oceanographic school(s) in developing regions of the world.

Members were unanimously in favour of accepting affiliates to the North Pacific Marine Science Organization but needed more time to review and discuss the criteria for acquiring PICES affiliate status. Science Board agreed to continue discussions at the next (inter-sessional) meeting.

Report of the Study Group on *Ecosystem Status Reporting* (Agenda Items 4 and 13)

The Chairman of the Study Group on *Ecosystem Status Reporting*, Mr. Robin Brown, presented the final report of the Study Group's views on

producing the next version of the North Pacific Ecosystem Status Report (NPESR). At the request of Governing Council at the 2007 inter-sessional Science Board/Governing Council meeting, the Study Group augmented its report to include estimates of the in-direct (in-kind) costs to the Members of preparing electronic and paper versions of the report.

Science Board unanimously endorsed proceeding with the “Incremental Improvement” Ecosystem Status Report which builds on the experiences of the pilot project. The timeline for completion of the report is anticipated to be 2 years after initiation, based upon estimates provided by the Secretariat. The next report is anticipated to require workshops organized along disciplinary lines to fill some of the obvious gaps that arose during the development of the pilot project. To facilitate better comparisons among regions and a more comprehensive synthesis, greater top-down control of the report will be needed for continuity and standardization.

The report could be integrated closely with FUTURE since FUTURE and the NPESR were identified as high priority activities (at the 2005 inter-sessional Science Board/Governing Council meeting in Seattle, U.S.A.). Science Board agreed that \$40,000 should be set aside for FUTURE-related activities and that the remainder of the funds currently designated for high priority activities should be used for the NPESR. Science Board also recommended that a portion of the NPESR funds should be set aside to provide ongoing updates to the electronic version of the report. Dr. Skip McKinnell was unanimously endorsed by Science Board to lead the preparation and publication of the next NPESR. Science Board recognized that Dr. McKinnell could not take on this responsibility without some adjustment to his present duties within the PICES Secretariat.

Implementation of Science Board recommendations and Governing Council decisions from PICES XV and the 2007 inter-sessional SB/GC meeting (Agenda Item 5)

Science Board accepted the report on decisions

and recommendations from PICES XV (see *GC Endnote 3*) and the 2007 inter-sessional Science Board/Governing Council meeting that were of relevance.

Status of action items from the 2007 inter-sessional SB/GC meeting (Agenda Item 6)

Dr. Gordon Kruse, Chairman of the FIS Committee, reported that a third draft of the WG 16 report on “*Impacts of climate and climate change on the key species in the fisheries of the North Pacific*”, for publication as a PICES Scientific Report, was delivered to him for review prior to the PICES Sixteenth Annual Meeting, and that his final review was pending.

MONITOR Committee Chairman, Dr. Jeffrey Napp, presented the new terms of reference of the Committee (*MONITOR Endnote 4*) which would clarify MONITOR’s role in facilitating cooperation, communication and coordination among all ocean observing systems in the North Pacific.

November 4, 2007

Report of elections of new Committee Chairmen (Agenda Item 7)

The following reflects changes and continuations in Chairmanship/Vice-Chairmanship for Scientific and Technical Committees and expert groups:

- Dr. John Stein to replace Dr. Kuh Kim as Science Board Chairman;
- Dr. Michael Dagg to serve a second term as BIO Committee Chairman;
- Dr. Michael Foreman to serve a second term as POC Committee Chairman;
- Dr. Hiroya Sugisaki to replace Dr. Jeffrey Napp as MONITOR Committee Chairman;
- Dr. Phillip Mundy to replace Dr. Sei-Ichi Saitoh as MONITOR Committee Vice-Chairman;
- Dr. Bernard Megrey to replace Dr. Igor Shevchenko as TCODE Committee Chairman;
- Dr. Kyu-Kui Jung to replace Dr. Bernard Megrey as TCODE Committee Vice-

Chairman;

- Dr. Sinjae Yoo to become Vice-Chairman of Science Board;
- Dr. Kerim Aydin to continue as Co-Chairman of CFAME Task Team up to, but not including, PICES XVII.

Reports from Scientific and Technical Committee and IP/EC CCCC Program Chairmen (Agenda Item 9)

Reports were presented by Committee and IP/EC CCCC Program Chairmen to Science Board. Specific details of the individual reports can be found elsewhere in this Annual Report.

Update of Action Plans (Agenda Items 9a and 9c)

Once the implementation workshop on FUTURE, scheduled for April 2008, has been initiated, Action Plans should be updated to align with the new program.

Proposals for inter-sessional activities, including travel and publications (Agenda Item 9b)

Inter-sessional activities

- An inter-sessional meeting of WG 19 on *Ecosystem-based management science and its application to the North Pacific*, February 2008, Seattle, U.S.A.;
- An ICES/PICES workshop on *“Environmental interactions of mariculture”*, April 2008, Victoria, Canada;
- An inter-sessional CFAME workshop on *“Linking and visualizing climate forcing mechanisms and marine ecosystem changes: A comparative approach”*, April 2008, Honolulu, U.S.A.;
- A workshop to develop an Implementation Plan for future for FUTURE and an inter-sessional Science Board/Governing Council meeting, April 2008, Seattle, U.S.A.;
- An international Symposium on *“Effects of climate change on the world’s oceans”* (co-sponsored by ICES, PICES, IOC, GLOBEC, SCOR and WCRP), May 19–23, 2008, Gijón, Spain;

- An international Symposium on *“Coping with global change in marine social-ecological systems”* (co-sponsored by GLOBEC, EUR-OCEANS, FAO, IRD, SCOR, IMBER and PICES), July 8–11, 2008 in Rome, Italy;
- A 2nd CREAMS/PICES summer school on *“Ecosystem-based management”*, August 23–25, 2008, Hakodate, Japan;
- A 4th International Workshop on *“The Okhotsk Sea and adjacent areas”*, August 2008, Abashiri, Japan;
- An international Symposium on *“Herring: Linking biology, ecology and status of populations in the context of changing environments”* (co-sponsored by ICES, PICES and GLOBEC), August 26–29, 2008, Galway, Ireland;
- A PICES/CREAMS Workshop on *“Flux studies in marginal seas”*, August 2008, Seoul, Korea;
- An ESSAS/PICES workshops at the ESSAS Annual Meeting, September 15–19, 2008, Halifax, Canada;
- ICES/PICES Theme Sessions on *“Coupled physical and biological models: Parameterization, validation, and applications”*, *“Marine spatial planning in support of integrated management – tools, methods, and approaches”*, and *“New methodology for tracking fish, mammal, and seabird behaviour and migrations”* at the ICES Annual Science Conference, September 22–26, 2008, Halifax, Canada;
- A PICES/ICES Theme Session on *“The effects of ocean acidification on fisheries and ecosystems”* at the International Symposium on *“The Ocean in a High CO₂ World – II”* (co-sponsored by SCOR, IOC, IAEA and IGBP), October 6–8, 2008, Monaco;
- An ICES/PICES/GLOBEC workshop on *“Changes in distribution and abundance of clupeiform small pelagic fish in relation to climate variability and global change”*, November 3–7, 2008, Kiel, Germany;
- An International Symposium on *“Rebuilding depleted fish stocks: Biology, ecology, social science and management strategies”* (co-sponsored by ICES, PICES and

UNCOVER), November 3–6, 2009, Warnemünde/Rostok, Germany;

- An International Symposium on “*Collection and interpretation of fishery-dependent data*” (co-sponsored by ICES, FAO and PICES), summer 2010, Galway, Ireland.

Travel requests

PICES XVII

- 6 invited speakers for the Science Board Symposium;
- 2 invited speakers for the BIO/OECOS Workshop;
- 1 invited participant to attend the initial meeting of BIO WG on euphasiids;
- 2 invited speakers for MEQ (HAB-S) workshop on *Review of selected harmful algae in the PICES region: IV. Karenia and Prorocentrum*;
- 1 invited speaker from ICES (ICES to fund speaker) for the MONITOR/TCODE/BIO Topic Session on “*Linking biology, ecology, and physics in our observational systems – present status and FUTURE needs*”;
- 1 invited speaker for CCCC workshop on “*Marine ecosystem model inter-comparison project*”;
- 1 invited speaker for CCCC/POC Topic Session on “*Marine system forecast models: Moving forward to the FUTURE*”.

Inter-sessional meetings

- 1 MONITOR representative to attend the GOOS Scientific Steering Committee meeting (GSSC-XI) (April 2008);
- \$10K for Asian travel to University of Victoria mariculture workshop (April 14–18, 2008, Victoria, Canada);
- A Co-Chairman of WG 20 on *Evaluations of Climate Change Projections*, 1 Korean scientist (Yellow Sea/East China Sea fish expert) and 1 North American scientist (California Current fish or plankton expert) to attend the CFAME workshop on “*Linking and visualizing climate-forcing mechanisms and marine ecosystem changes: A comparative approach*”, April 15–17, 2008, Honolulu, U.S.A.;
- A PICES affiliate member of SCOR

Working Group 125 on *Global zooplankton comparisons* to attend the workshop on “*Zooplankton and climate: response modes and linkages among regions, regimes, and trophic levels*”, May 18, 2008, Gijon, Spain;

- 1 PICES convenor and members of the Scientific Steering Committee for the International Symposium on “*Effects of climate change on the world’s oceans*”, May 19–23, 2008, Gijón, Spain;
- A PICES member of the Discussion Panel for the International Symposium on “*Coping with global change in marine social-ecological systems*”, July 8–11, 2008, Rome, Italy;
- 1 invited speaker for the 4th International Workshop on the “*Okhotsk Sea and adjacent areas*” (August 2008, Hakodate, Japan);
- 1 guest lecturer for a 2nd CREAMS/PICES summer school on “*Biomass-based management*” (August 23–26, 2008, Hakodate, Japan);
- A member of WG 20 and a representative of the CCCC Program (an ecosystem modeler) to attend the ESSAS Annual Meeting, September 15–19, 2008, Halifax, Canada;
- 1 PICES co-convenor at the ICES Annual Meeting theme session on “*New methodology for tracking fish, mammals and marine seabird migrations and behavior*” (September 22–26, 2008, Halifax, Canada);
- 1 PICES co-convenor/speaker for an ICES Annual Meeting theme session on “*Coupled physical and biological models: Parameterization, validation and applications*” (September 22–26, 2008, Halifax, Canada);
- 1 PICES co-convenor for ICES Annual Meeting theme session on “*Marine spatial planning in support of integrated management – tools, methods, and approaches*” (September 22–26, 2008, Halifax, Canada);
- A PICES representative and 1 or 2 invited speakers to attend the International Symposium on “*The ocean in a high CO₂ world*”, October 6–8, 2008, Monaco;
- A PICES convenor for the ICES/PICES Workshop on “*Changes in distribution and abundance of clupeiform small pelagic fish in relation to climate variability and global*

- *change*” (November 2008, Kiel, Germany);
- A PICES convenor for the symposium on “*Rebuilding depleted fish stocks: Biology, ecology, social science and management strategies*”, November 2–5, 2009, Warnemünde/Rostok, Germany;
- A PICES convenor/speaker for the International Symposium on “*Collection and interpretation of fishery-dependent data*”, summer 2010, Galway, Ireland.

Publications

Special issues of primary journals (2008–2009)

- *Plankton and Benthos Research* (2008; Guest Editors: H. Iizumi and K. Ishii) – selected papers from the PICES XV Topic Session on “*The human dimension of jellyfish blooms*” (approved in 2006);
- *Progress in Oceanography* (2008; Guest Editors: H. Batchelder and S. Kim) – selected papers from the PICES/GLOBEC symposium on “*Climate variability and ecosystem impacts on the North Pacific: A basin-scale synthesis*” (approved in 2005);
- *Journal of Marine Systems* (2008; Guest Editors: K.-I. Chang, C. Mooers, J.-H. Yoon and S.-I. Ito) – selected papers from the 2006 CREAMS/PICES Workshop on “*Model–data inter-comparison for the Japan/East Sea*”;
- *ICES Journal of Marine Science* (2008; Guest Editors: M. Dagg, R. Harris, L. Valdez and S.-I. Uye) – Selected papers from the 4th International Zooplankton Production Symposium on “*Human and climate forcing of zooplankton populations*” (approved in 2007);
- *Deep-Sea Research II* (2008; Guest Editors: W. Peterson and S. Kawaguchi) – Selected papers on krill from the 4th International Zooplankton Production Symposium on “*Human and climate forcing of zooplankton populations*” (approved in 2007);
- *ICES Journal of Marine Science* (2008; Guest Editors: F. Mueter and E. North) – Selected papers from the ICES/PICES Early Career Scientists Conference on “*New frontiers in marine science*” for a section the the regular issue (approved in 2007);
- *Deep-Sea Research II* (2008; Guest Editors: A. Tsuda, M. Wells, M. Uematsu and H. Saito) – Selected papers from the SEEDS-II experiment;
- *Journal of Northwest Atlantic Fishery Science* (2008; Guest Editors: R.D. Brodeur, M. Dickey-Collas and E. Trippel) – Selected papers from the International Symposium on “*Reproductive and recruitment processes of exploited marine fish stocks*”;
- *Fisheries Research* (2008; Guest Editors: G.H. Kruse, Y. Ishida, T. Perry, V. Radchenko and C.-I. Zhang) – Selected papers from the PICES XVI Topic Session on “*Ecosystem approach to fisheries: Improvements on traditional management for declining and depleted stocks*”;
- *Journal of Oceanography* (2008/9; Guest Editors: T. Saino, J.R. Christian, K. Lee and TBA) – selected papers from the PICES XV Topic Session on “*Decadal changes in carbon biogeochemistry in the North Pacific*” (approved in 2007);
- *Deep-Sea Research II* (2009; Guest Editors: S. McKinnell, W. Sydeman, S. Minobe) – selected papers on results of PICES XVI Topic Session on “*Phenology and climate change in the North Pacific: Implications of variability in timing of zooplankton production to fish, seabirds, marine mammals and fisheries (humans)*”;
- *Progress in Oceanography* (2009; Guest Editors: B.A. Megrey, J.S. Link and E. Moksness) – selected papers from the ICES/PICES Theme Session on “*Comparative marine ecosystem structure and function: Descriptors and characteristics*” at the 2007 ICES Annual Science Conference.

PICES Scientific Report series (2008–2009)

- Report of 2007 FIS workshops on “*Forecasting climate impacts on fish production*” (2008; Editors: A. Hollowed, R. Beamish and M. Schirripa);
- Final report of WG 16 on *Climate Change Shifts in Fish Production, and Fisheries Management* (approved in 2002 for publication in 2004; delayed until early 2008 pending review of third draft by FIS; Editors: R. Beamish and A. Yatsu);

- Results of annual HAB workshops on “*Review of selected harmful algae in the PICES region*”: *Alexandrium* and *Pseudo-nitzschia* (2005), *Cochlodinium* and *Dinophysis* (2006) and *Heterosigma* (2007) (2008/2009; Editors: TBD);
- Final report of WG19 on *Ecosystem-based management science and its application to the North Pacific* (early 2009; Editors: G. Jamieson, P. Livingston and C.-I. Zhang);
- Final report for the CCCC Program (2009; Editor: M. Kishi);
- A summary of the activities of the CFAME Task Team (may be merged with CCCC report).

PICES Technical Report series (2008)

- An updated version of “*Metadata federation of PICES member countries*”.

Other publications

- Summary paper of SEEDS I, II, and SERIES in *Eos* (2008; S. Takeda);
- WG 19 Brochure on “*Ecosystem-based management science and its application to the North Pacific*” (late 2008; G. Jamieson, P. Livingston and C.-I. Zhang);
- Results from the CCCC Program distributed among several chapters of the GLOBEC Synthesis Book (2009/2010; H. Batchelder and S. Kim);
- Announcement, poster and Book of Abstracts for PICES XVII;
- Two issues of PICES Press (newsletter);
- PICES 2008 Annual Report.

Other

- Rental of web services co-sponsored by TCODE/MONITOR Committees to test PICES web resources capability for FUTURE-related events (\$2.5k for 12 months).

Standing list of international and regional organizations and programs (Agenda Item 9d)

The Standing List of International Organizations and Programs facilitates PICES interactions with other programs and indicates high priority organizations/programs to whose meetings

PICES should pursue collaborative issues with (see SB Endnote 3 for a revised list).

Report of the Study Group on Marine Aquaculture and Ranching in the PICES Region and recommendations for new working groups and other subsidiary bodies and (Agenda Items 8 and 10)

Dr. Michael Rust, Chairman of the Study Group on *Marine Aquaculture and Ranching in the PICES Region* (SG-MAR) presented his group’s finalized report that addressed the Study Group’s four terms of reference. Feedback from former WG 18 on *Mariculture in the 21st Century – The Intersection between Ecology, Socio-economics and Production* was solicited as to why the WG had limited success in achieving its terms of reference. Responses included 1) none of the members had input to the terms of reference, 2) the expertise of the members were not in synchrony, 3) a lack of existing personnel relationships among the Working Group, and 4) the isolated position of aquaculture within the larger framework of PICES. Based on the responses of each PICES member country, the Study Group developed a list of highest priority needs of marine aquaculture and/or ocean ranching science for the next 5 to 10 years. Based on the priorities, the Study Group recommended the formation of two working groups in marine aquaculture for joint activities in PICES.

Science Board recommended waiting until after a 2008 ICES/PICES-co-sponsored workshop at the University of Victoria, Canada, to assess whether or not there was sufficient interest to warrant establishing a Working Group on *Environmental Risk Assessment and Interactions of Marine Aquaculture* and a Working Group on *Technology and Management for Production Aquaculture*.

Science Board recommended establishing:

- a new Working Group on *Iron Supply and Its Impact on Biogeochemistry and Ecosystems in the North Pacific Ocean* subject to adding two additional term of references.

- a new Working Group on Euphausia pacifica in *Continental Shelf and Slope Waters around the Pacific Rim* and changing the species title to the more generic “krill”.

Science Board recommended deferring the proposal to form a Study Group on *Indicators of Human Well-being* by MEQ until the next Science Board inter-sessional meeting when plans for the Study Group, following a proposed MEQ session on this topic in Dalian (see below), were more fully developed. Science Board recommended deferring the proposal for a FIS Working Group on *Management Strategies to Address the Implications of Climate Variability and Climate Change on Trends in Fish and Shellfish Production* until next Annual Meeting so that POC/WG 20 could be involved.

PICES XVII theme and description, draft schedule of scientific sessions and workshops (Agenda Item 11)

Science Board agreed that the theme for PICES XVII, to be held in Dalian, China, from October 23 to November 2, 2008, should be “*Beyond observations to achieving understanding and forecasting in a changing North Pacific: Forward to the FUTURE*”. During PICES XVI, Prof. Kuh Kim appointed members, Drs. Harold Batchelder, Michael Dagg and Michael Foreman, to edit the existing draft of the theme for better comprehension and clarity and to have the final version prepared for the November 3 Science Board meeting (see *SB Endnote 4*). The following sessions and workshops, in order of Committee/Program, were recommended to be convened.

1-day Science Board Symposium

Beyond observations to achieving understanding and forecasting in a changing North Pacific: Forward to the FUTURE

1-day BIO Topic Session

End-to-end foodwebs: Impacts of a changing ocean

½-day BIO/MEQ Topic Session

Seabirds and marine mammals as environmental indicators

½-day BIO Contributed Paper Session

1-day BIO Workshop

Oceanic ecodynamics comparison in the subarctic Pacific

½-day FIS Topic Session

Effects of fisheries bycatch and discards on marine ecosystems and methods to mitigate the effects

¾-day FIS Topic Session

Institutions and ecosystem-based approaches for sustainable fisheries under fluctuating marine resources

1-day FIS Contributed Paper Session

1-day MEQ Topic Session

Consequences of non-indigenous species introductions

½-day MEQ Topic Session

*Human dimension sciences relevance for PICES (later renamed to *Connecting the human and natural dimensions of marine ecosystems and marine management in the PICES context*)*

½-day MEQ Topic Session

*Environmental regulation of species succession: The use of long-term data sets to understand HAB species dominance (later renamed to *Species succession and long-term data set analysis pertaining to harmful algal blooms*)*

¾-day MEQ/FIS Topic Session

Mariculture technology and husbandry for alternate and developing culture species

1-day MEQ Workshop

Review of selected harmful algae in the PICES region: IV. Karenia and Prorocentrum and a ½-day lab demonstration.

1-day MONITOR/ TCODE/BIO Topic Session

Linking biology, chemistry, and physics in our observational systems – present status and FUTURE needs

1-day MONITOR/ESSAS Workshop

Status of marine ecosystems in the sub-Arctic

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and Arctic seas – Preliminary results of IPY field monitoring in 2007 and 2008

¾-day POC Topic Session

Coastal upwelling processes and their ecological effects

1-day POC Contributed Paper Session

1-day CCCC/POC Topic Session

Marine system forecast models: Moving forward to the FUTURE

1-day CCCC/ESSAS Workshop

Marine ecosystem model inter-comparisons

1½-day CCCC/POC/FIS Workshop

Climate scenarios for ecosystem modeling (II)

The description of the PICES Ocean Monitoring Service Award (POMA) was endorsed by Science Board. (See *GC Appendix D*)

Selection of PICES XVIII theme and description (Agenda Item 12)

Science Board agreed in principle with the proposed theme for PICES XVIII in Busan, Korea in 2009, entitled “*Understanding ecosystem dynamics, pursuing ecosystem approaches to management*”.

High Priority activities (Agenda Item 13)

Science Board updated the list of high priority activities, identified at the third inter-sessional Science Board/Governing Council meeting in Seattle, U.S.A. in 2005, to: (1) Implementation (formerly “Development”) of PICES future integrative scientific program, (2) North Pacific Ecosystem Status Report, and (3) International exchange and capacity building.

Next inter-sessional Science Board meeting (Agenda Item 14)

Science Board recommended holding the next inter-sessional Science Board meeting in the

third week of April, 2008 in Seattle, U.S.A., to coincide with the implementation of the science program of FUTURE.

Other business (Agenda Item 15)

Dr. Glen Jamieson, Chairman of the MEQ Committee, presented a brief update of the Japanese-funded PICES projects on *Development of the prevention systems for harmful organisms’ expansion in the Pacific Rim*, scheduled to run for 5 years. Funding for the first year was to be split between the Section on Harmful Algal Blooms (HAB-S) sub-project and the Marine/Estuarine Invasive Species (MIS) sub-project. As a capacity building activity, HAB-S will conduct a training workshop in Vietnam to develop methodologies in year 1. Inter-sessional WG 21 experts are planning to meet in late February or early March 2008, in Korea to evaluate proposed AIS documentation protocols and reach final agreement on standards, data elements and data entry templates for the MIS (Marine/Estuarine Invasive Species) Database for the PICES project on “*Development of the prevention systems for harmful organisms’ expansion in the Pacific Rim*”. Each member country will provide information on a pilot MIS taxon (bivalves) that will be entered into an MIS database for further development.

Best Presentation and Poster Awards

Dr. Muyin Wang (U.S.A.) received the Best Presentation Award at the Science Board Symposium for her paper (co-authored with James E. Overland) on *Future climate of North Pacific projected by IPCC models*. The other Awards can be found in Committees and Program.

Dr. Kim thanked Dr. Foreman for organizing the curling event, as the host country sport, and all the Committee Chairmen for working well together.

SB Endnote 1**Participation List**Members

Harold P. Batchelder (Co-Chairman, CCCC-IP)
 Michael J. Dagg (Chairman, BIO)
 Michael G. Foreman (Chairman, POC)
 Glen Jamieson (Chairman, MEQ)
 Kuh Kim (Chairman, Science Board)
 Michio J. Kishi (Co-Chairman, CCCC-IP)
 Gordon H. Kruse (Chairman, FIS)
 Jeffrey M. Napp (Chairman, MONITOR)
 Igor I. Shevchenko (Chairman, TCODE)
 John E. Stein (Chairman-elect, Science Board)
 Fangli Qiao (Science Board, representative of
 China)
 Sinjae Yoo (Science Board, representative of
 Korea)

Invited Observers

Stewart (Skip) M. McKinnell (Deputy Executive
 Secretary, PICES)
 Francisco E. Werner (Chairman, GLOBEC
 Scientific Steering Committee)
 R. Ian Perry (Ex-officio member, GLOBEC
 Scientific Steering Committee)
 Adolf Kellermann (Head, ICES Science
 Programme, ICES)
 Bjørn Sundby (President, SCOR Executive
 Committee)

SB Endnote 2**Science Board meeting agenda****Sunday, October 28, 2007 (12:30 – 14:00)**

1. Welcome and adoption of agenda
2. Review of procedures for Science Board Symposium and Session awards, FISP and Closing Session
3. Relations with specific international programs/organizations
4. Report of the Study Group on *Ecosystem Status Reporting*
5. Implementation of Science board recommendations and Governing Council decisions from PICES XV and the 2007 inter-sessional SB/GC meeting
6. Status of Action items from the 2007 inter-sessional SB/GC meeting

Saturday, November 3, 2007

FISP Open Forum

Sunday, November 4, 2007 (9:00–18:00)

7. Report of elections of new Committee Chairmen
8. Report of the Study Group on *Marine Aquaculture and Ranching in the PICES Region*
9. Reports from Scientific and Technical Committees and CCCC Program
10. Recommendations for new working groups and other subsidiary bodies
11. PICES XVII (2008, China) theme and description, draft schedule of scientific sessions and workshops
12. Selection of PICES XVIII (2009, Korea) theme and description
13. High priority activities
14. Next inter-sessional Science Board meeting
15. Other business

SB Endnote 3

Revised *Standing List of International and Regional Organizations and Programs*

PICES is expanding its relationships with international scientific organizations of regional and global scale, and with regional scientific and monitoring efforts in the North Pacific that are aligned with the PICES ecosystem research focus. These regional programs may involve several PICES member countries and cover international areas of high ecological importance. Annually, the Science Board examines and revises the *Standing List of International and Regional Organizations and Programs*. Additionally, it selects a subset of organizations and programs that are considered to have the highest priority (marked by *) for PICES with respect to scientific cooperation and facilitation in the coming year.

The 2007 addition to the list, below, was:

PAG Pacific Arctic Group

This list will be used, in part, to assist the Executive Secretary and Science Board in decisions regarding travel to meetings of other international organizations.

ACIA	Arctic Climate Impact Assessment Program (ACIA of AMAP)
AFSCAR	American Fisheries Society Program on Climate and Aquatic Resources
AMAP	Arctic Monitoring and Assessment Program
AOOS*	Alaska Ocean Observing System
APEC-MRC*	Marine Resources Conservation WG, Asia Pacific Economic Cooperation
APEC-FWG*	Fisheries Working Group, Asia Pacific Economic Cooperation
APFIC	Asia-Pacific Fisheries Commission
APN	Asia-Pacific Network for Global Change Research
Argo*	International Program for deployment of profiling floats (linked with GOOS)
BEST*	Bering Ecosystem Study
CLIVAR*	Climate Variability and Predictability Program
CoML*	Census of Marine Life
CREAMS*	Circulation Research in the East Asian Marginal Seas
DBCP	Data Buoy Cooperation Panel
ECOR	Engineering Committee on Oceanic Resources
ESSAS*	Ecosystem Studies of Sub-Arctic Seas
FAO	Food and Agriculture Organization
GCOS*	Global Climate Observing System
GEM*	Gulf of Alaska Ecosystem Monitoring and Research Program of <i>Exxon Valdez</i> Oil Spill Trustee Council (EVOS)
GEOSS	Global Earth Observing System of Systems
GESAMP	Group of Experts on Scientific Aspects of Marine Pollution
GIPME	Global Investigation of Pollution in the Marine Environment
GLOBEC*	Global Ocean Ecosystem Dynamics
GOOS*	Global Ocean Observing System
IAMSLIC	International Association of Marine Science Libraries
IASC	International Arctic Science Committee
IATTC	Inter-American Tropical Tuna Commission
ICES*	International Council for the Exploration of the Sea
ICSU	International Council of Scientific Unions
IGBP*	International Geosphere-Biosphere Program
IGOSS	Integrated Global Ocean Services System
IMBER*	Integrated Marine Biogeochemistry and Ecosystems Research (former OCEANS)

IMO	International Maritime Organization
IOC*	Intergovernmental Oceanographic Commission
IODE	International Oceanographic Data and Information Exchange
IPCC*	Intergovernmental Panel on Climate Change
IPHC	International Pacific Halibut Commission
IWC	International Whaling Commission
NAFO	Northwest Atlantic Fisheries Organization
NANOOS-IOOS	Northwest Association of Networked Ocean Observing Systems – Integrated Ocean Observing System
NASCO	North Atlantic Salmon Conservation Organization
NEAR-GOOS*	North East Asian Regional GOOS
NOWPAP*	Northwest Pacific Action Plan
NPAFC*	North Pacific Anadromous Fish Commission
NPFMC	North Pacific Fishery Management Council
NPRB*	North Pacific Research Board
PaCOOS*	Pacific Coast Observing System
PAG	Pacific Arctic Group
PORSEC	Pacific Ocean Remote Sensing Conference
PSA	Pacific Science Association
PSC	Pacific Salmon Commission
PSG	Pacific Seabird Group
SAHFOS*	Sir Alister Hardy Foundation for Ocean Science
SCOPE	Scientific Committee on Problems of the Environment
SCOR*	Scientific Committee on Oceanic Research
SOLAS*	Surface Ocean Low Atmosphere Study
SPC	South Pacific Commission
SPREP	South Pacific Regional Environmental Program
START	South Asian Regional Committee for the System for Analysis, Research and Training
UNEP	United Nations Environment Program
WCRP	World Climate Research Program
WESTPAC*	Cooperative Study of the Western Pacific, IOC Sub Committee for the Western Pacific
WMO	World Meteorological Organization

SB Endnote 4

Theme for PICES XVII (Dalian, China)

Beyond observations to achieving understanding and forecasting in a changing North Pacific: Forward to the FUTURE

FUTURE (Forecasting and Understanding Trends, Uncertainty and Responses of North Pacific Marine Ecosystems), the new Science Program undertaken by PICES Member Nations and their affiliates, has the broad goals of i) understanding the responses of marine ecosystems in the North Pacific to climate change and human activities at basin-wide and regional scales, ii) providing forecasts of what might be expected based on a current understanding of how nature works, and iii) communicating this information effectively

to its Members and to society in general. Past advances in understanding marine ecosystems in the North Pacific have been largely based either on the direct analysis of observations, or the development of conceptual and numerical models that help describe the processes underlying the observations. Though these activities will continue to play an important role in FUTURE, the provision of forecasts and estimates of their associated uncertainties necessitates moving beyond observationally based understanding so that ecosystem responses

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to natural and anthropogenic changes can be anticipated and communicated effectively to society.

The Science Board Symposium at PICES XVII invites presentations to address the goals of FUTURE and the three key research questions that it identifies, specifically:

1. What determines an ecosystem's intrinsic resilience and vulnerability to natural and anthropogenic forcing?

2. How do ecosystems respond to natural and anthropogenic forcing, and how might they change in the future?

3. How do human activities affect coastal ecosystems and how are societies affected by changes in these ecosystems?

Presentations addressing other components of the FUTURE program such as i) communicating scientific information to governments, policy makers, and society at large, and ii) forging partnerships with social scientists, are also welcome.