

## REPORT OF SCIENCE BOARD

The Science Board (*SB Endnote 1*) met from 1230–1430 h on October 25, 2009 in Jeju, Korea, a to review the first part of its meeting agenda (*SB Endnote 2*) and to discuss items concerning the upcoming scientific sessions, awards, and the Closing Session at the Annual Meeting. Science Board met again October 31 from 900–1730 h to discuss the remainder of the agenda. Chairman, Dr. John Stein, welcomed guests and members and called the meeting to order. The agenda was discussed and adopted as presented.



Skip McKinnell, Mikhail Stepanenko, Gongke Tan, Glen Jamieson, Sinjae Yoo, Harold (Hal) Batchelder, John Stein, Michael Dagg, Hiroya Sugisaki, Michael Foreman, Hiroaki Saito, Mitsutaku Makino, Bernard Megrey

**October 25, 2009**

AGENDA ITEM 2

### **Review of procedures for Science Board Symposium, Topic Session awards, and Closing Session**

Past practices were reviewed and it was agreed that the format of the previous year would be used in judging oral and poster presentations for the Science Board Symposium and topic sessions. Where topic sessions were co-sponsored by one or more Committees, the Chairman gave responsibility for judging to one of the Committees.

AGENDA ITEM 3

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

Drs. Wolfgang Fennel, President, and Ed Urban, Executive Director, of SCOR, were unable to attend the Science Board meeting, but conveyed the following by email:

- SCOR appreciates the contributions of PICES to SCOR activities and looks forward to continued interaction.
- SCOR has approved US\$5000 for the PICES symposium on climate and fisheries and another \$5000 for SCOR-related sessions at the PICES-2010 Annual Meeting for travel of scientists from developing countries, Russia, and Eastern Europe to these meetings.

## SB-2009

- PICES is welcome to co-sponsor SCOR working groups, if it is willing and able to contribute appropriate funding for groups that are global in scope.
- SCOR has created a Working Group on *Patterns of Phytoplankton Dynamics in Coastal Ecosystems: Comparative Analysis of Time Series Observations*, and welcomed the offer from PICES to support an Associate Member of the group.

Science Board unanimously supported SCOR's Working Group and unanimously decided to have Science Board Vice-Chairman, Dr. Sinjae Yoo, serve as an Associate Member in the Working Group.

ICES observer, Dr. Michael Sinclair, emphasized that ICES has a keen interest in continued collaboration with PICES. He discussed the idea of holding another joint ICES/PICES Early Career Scientist Conference with ICES, which Science Board unanimously endorsed. Each Committee Chairman was asked to nominate three Early Career Scientists to serve on its SSC before the next Science Board meeting on October 31.

### AGENDA ITEM 4

#### **Implementation of Science Board recommendations and Governing Council decisions**

Science Board accepted the report on decisions and recommendations that were of relevance from PICES-2008 (see *GC Appendix A*) and the 2009 inter-sessional Science Board meeting.

### AGENDA ITEM 5

#### **Update on Study Group on *Restructuring of the PICES Annual Meeting***

Dr. Stein instructed Science Board members to review the October 8, 2009 version of the report prepared by the Study Group on *Restructuring of the PICES Annual Meeting* and be prepared to discuss recommendations at the next Science Board meeting.

*October 31, 2009*

### AGENDA ITEM 5

#### **Update on Study Group on *Restructuring of the PICES Annual Meeting* (continued)**

Science Board reviewed the report prepared by the Study Group on *Restructuring of the PICES Annual Meeting* and had no substantive comments on its recommendations.

### AGENDA ITEM 6

#### **Report on Elections in Committees and other expert groups**

Dr. Glen Jamieson, Chairman of the MEQ Committee, did not seek a second term. Dr. Steve Rumrill (U.S.A.) was elected to succeed Dr. Jamieson and Dr. Mitsutaku Makino (Japan) was elected as Vice-Chairman. The following is a list of changes of Chairman/Vice-Chairman for other Scientific and Technical Committees and expert groups:

- Dr. Thomas Therriault nominated by Science Board to act a Chairman of the FUTURE Advisory Panel on *Anthropogenic Influences on Coastal Ecosystems*
- Dr. Hiroaki Saito nominated by Science Board to act a Chairman of the FUTURE Advisory Panel on *Climatic, Oceanographic Variability and Ecosystems*;
- Mr. Robin Brown nominated by Science Board to act a Chairman of the FUTURE Advisory Panel on *Status, Outlooks, Forecasts, and Engagement*.

## AGENDA ITEM 7

**Election of Science Board Chairman**

At the Science Board Chairman's discretion, an election was scheduled for PICES-2009 to appoint a Chairman-elect. No nominations were received by the deadline. Rule of Procedure Rule 17(i) stipulates that *qualified candidates nominated, or seeking, to be elected as Chairman of the Science Board shall submit their credentials (curriculum vitae and letter of justification) in writing to the Executive Secretary at least 60 days prior to the start of an annual meeting at which said election will occur.* After the deadline, representatives of the Government of the Republic of Korea nominated Science Board Vice-Chairman, Dr. Sinjae Yoo for the position of Science Board Chairman. Science Board voted unanimously to waive the 60-day requirement for nominations and unanimously endorsed Dr. Yoo as the Science Board Chairman-elect.

## AGENDA ITEM 8

**Relations with specific international programs/organizations (continued)**

The Scientific Steering Committee of IMBER (Integrated Marine Biogeochemistry and Ecosystem Research) proposed a memorandum of understanding (MOU) between it and PICES, which would ensure FUTURE as a regional project. Science Board noted that PICES normally enters into MOUs on a peer-to-peer basis. Since IMBER is a project of SCOR, Science Board agreed that an MOU would not be appropriate at this time, but recommended that the Secretariat send a letter to IMBER stating that PICES would be willing to cooperate with it in areas of joint interest. Science Board recommended co-sponsoring IMBER IMBIZO II, to be held October 10–14, 2010 in Crete.

Dr. Jamieson, Chair of MEQ, requested *ex-officio* membership in HAB-S for a NOWPAP-CERAC member (Dr. Takifumi Yoshida) and for an ICES HAB Working Group member. Dr. Bern Megrey, Chair of TCODE, requested that Edward Vanden Berghe of OBIS (Ocean Biogeographic Information System) be appointed as an *ex-officio* member of TCODE.

## AGENDA ITEM 9

**Reports from FUTURE Advisory Panels**

Science Board reviewed the reports of the FUTURE Advisory Panels on *Climate, Ocean Variability and Ecosystems* (COVE), *Anthropogenic Influences on Coastal Ecosystems* (AICE), and *Status, Outlooks, Forecasts and Engagements* (SOFE). On October 27, 2009 each group met separately for 2 hours to review their roles, Terms of Reference of expert groups relevant to their charge, to discuss what might be the initial advice on the next steps of FUTURE, and to identify two candidates for AP Chair. The Advisory Panels then met jointly for 2½ hours to discuss their relationship to Science Board, what role they will play in providing advice on the priorities of FUTURE, and what processes and next steps to take, including:

- Meeting individually for 3½ hours and jointly for 1½ hours before an Annual Meeting;
- Provide advice to Committees on high priority topic sessions that will further the implementation of FUTURE. Topic sessions of high priority to FUTURE will be co-sponsored by a relevant Committee and FUTURE;
- AP Chairs working with their members to set terms of reference and to develop a work plan which will be reviewed by Science Board before the next inter-sessional Science Board meeting for conditional approval at the meeting;
- Developing operating procedures to describe a process for AP meetings, their interaction with expert groups, and how Science Board will operate as the SSC for FUTURE.

Science Board selected the following to chair the FUTURE Advisory Panels: Dr. Hiroaki Saito (COVE), Dr. Thomas Therriault (AICE), and Mr. Robin Brown (SOFE). Science Board recommended that the chairmen serve for a 3-year term, but that they would not rotate off at the same time. To do this initially, the chair of one AP would continue for 4 years, after which time the 3-year rotation would apply to everyone. In order for

modelling to have a higher visibility in FUTURE, Science Board recommended that the APs discuss and formulate recommendations for the role of modelling in PICES, and to recommend what type of expert group would be best for fitting the needs of modellers.

Science Board agreed that the name “FUTURE” would be added to any topic sessions or workshops that were co-sponsored by any of the FUTURE Advisory Panels.

**Action:**

FUTURE APs to make recommendations on how best to fit modelling expertise into FUTURE and what is the best type of expert group for modelling needs.

AGENDA ITEM 10

**FUTURE SSC-Planning for 2010 Inter-sessional Science Board meeting**

Science Board will meet from April 23–24, 2010 in Sendai, Japan, prior to the PICES/ICES/FAO Symposium on “*Forecasting climate change impacts on fish and shellfish*” (April 25–29). Because of Science Board’s new role as SSC for FUTURE, at least one day will be devoted to activities related to FUTURE. Since it is usual for a host country of an Annual Meeting to be the host the inter-sessional Science Board meeting, Korean Delegates agreed that it was reasonable for Japan to hold the symposium and meeting at the same venue. In lieu of hosting the meeting, Dr. Yoo informed Science Board that Korea would support an activity related to FUTURE in 2010 in Korea.

AGENDA ITEM 11

**High priority items for Science Board to Governing Council**

**Proposed new groups**

A Study Group on *Human Dimensions* (SG-HD) was recommended by Science Board at ISB-2009 and was provisionally approved by Council once minor modifications were implemented. The proposed SG Chairman, Dr. Mitsutaku Makino, was invited by Science Board to describe its objectives (see *SB Endnote 3*). There was consensus among Science Board members that the Study Group will provide value to PICES by encouraging better understanding between social and natural scientists.

Science Board did not support a proposal by MEQ for the establishment of PULSE (PICES Understanding, Linking and Synthesis of Ecosystems) as an ongoing expert group at this time. It was recommended instead that SG-HD revise its terms of reference slightly to incorporate a social science linkage to ecosystem-based fisheries management.

The proposed PICES/ICES Study Group on *Strategic Planning* (later renamed to *Framework*) for *Scientific Cooperation in the Northern Hemisphere Marine Science* garnered approved in principle from Council. It will allow for enhanced cooperation between ICES and PICES and serve as a basis for linkages of their science plans and the longer-term planning by the two organizations. Science Board and the Secretariat will work with ICES to finalize the terms of reference, timelines and membership for the group (Decision 09/S/10(iii)) (*SB Endnote 4*).

For PICES to have a higher profile and improve its relevance to the scientific community, Science Board recommended that all appropriate Working Groups and other expert groups should amend their terms of reference to include the development of a product that would communicate their activities to a lay audience. It would be posted on the PICES website and Science Board could determine if it should be developed into a brochure. Because of budget implications involved with publication and translation into other languages, Dr. Dagg volunteered to approach NPRB for financial support to assist in producing a limited number of such documents. This would help PICES test the feasibility of brochures as an outreach tool.

Final reports by the Working Group on *Ecosystem-based Management and its Applications to the North Pacific* (WG 19) and Advisory Panel on *Micronekton Sampling Inter-calibration Experiment* (MIE-AP) were completed and approved by their parent Committees. The final report by the *Climate Forcing and Marine Ecosystem* Task Team is incomplete because some regional chapters have been received. Science Board recommended disbanding these three expert groups.

**Action:**

Dr. Dagg to write a proposal to NPRB to ask for financial support in producing a 2-page outreach document.

**Sponsorship or co-sponsorship of inter-sessional meetings/workshops/symposia**

- Second PICES Harmful Algal Bloom training course, February 10–19, 2010, Guatemala-City, Guatemala;
- POC/BIO Workshop on *Carbon data synthesis (II)*, June 2010, Japan or U.S.A.;
- IMBER Summer School on “*Oceans, marine ecosystems, and society facing climate change: A multidisciplinary approach*” (ClimECO2) sponsored by CNRS, Europole Mer., IRD, PICES and UBO, August 23–27, 2010, Brest, France;
- Meeting of the Study Group on *Human Dimensions*, June 2010, Japan
- CREAMS/PICES EAST-II (East Asian Seas Time Series) Workshop, September 11–12, 2010, Gangneung, Korea;
- IMBER IMBIZO II on “*Integrating biogeochemistry and ecosystems in a changing ocean: Regional comparisons*”, co-sponsored by PICES, October 10–14, 2010, Crete;
- 2 ICES/PICES theme sessions on *Impact of climate variability on marine ecosystems: Understanding functional responses to facilitate forecasting*” and “*Development and use of ocean observing and forecasting systems in coastal and marine management*” at the ICES 2010 Annual Science Meeting, October 22-31, 2010, Nantes, France;
- Second ESSAS Open Science Meeting on “*Comparative studies of climate effects on polar and sub-polar ocean ecosystems: Progress in observation and prediction*”, (organizational support by PICES) June 2011, Seattle, U.S.A.;
- PICES/ICES joint Strategic Planning Workshop (postponed);

**High priority projects**

No new high priority projects were proposed.

**Attendance at inter-sessional meetings/workshops/symposia**

- 1 MONITOR representative to attend a Sustained Arctic Ocean Network (SAON) meeting, March 16–19, 2010, Miami, U.S.A.;
- 1 MONITOR representative to attend an ICES/GOOS Working Group meeting, April 20–21, 2010, Woods Hole, U.S.A.;
- 1 WG 20 member to attend PICES/ICES/FAO Symposium on “*Climate change effects on fish and fisheries*”, April 25-29, 2010, Sendai, Japan;
- 2 experts to attend the POC/BIO Workshop on *Carbon data synthesis (II)*, June 2010, Japan or U.S.A.;
- 6 early career scientists (1 from each member country) to attend the IMBER Summer School on “*Oceans, marine ecosystems, and society facing climate change: A multidisciplinary approach*” (ClimECO2) sponsored by CNRS, Europole Mer., IRD, PICES and UBO, August 23–27, 2010, Brest, France;
- 2 invited speakers to attend a CREAMS/PICES EAST-II Workshop, September 11–12, 2010, Gangneung, Korea;
- 1 WG 20 member to attend the 2010 ESSAS Annual Science Meeting, September 2010, Reykjavik, Iceland;
- 3 PICES scientists to attend 2 ICES/PICES theme sessions on *Impact of climate variability on marine ecosystems: Understanding functional responses to facilitate forecasting*” and “*Development and use of*

*ocean observing and forecasting systems in coastal and marine management* at the ICES 2010 Annual Science Meeting, October 22-31, 2010, Nantes, France;

- 3 invited speakers to attend the second IMBER IMBIZO on “*Integrating biogeochemistry and ecosystems in a changing ocean: Regional comparisons*”, October 10–14, 2010, Crete;
- 4 early career scientists to attend the second ESSAS Open Science Meeting on “*Comparative studies of climate effects on polar and sub-polar ocean ecosystems: Progress in observation and prediction*”, June 2011, Seattle, U.S.A.;
- rental of an off-site AdHost server, to hold the federated metadata library and PICES publications, on an annual, rather than monthly basis. (Annual cost will be \$2050 and the savings will be about 12%.)

## Publications

No new publications were proposed for 2010. A Working Group on *Non-indigenous Aquatic Species* (WG 21) atlas on NIS (in CD format) is proposed for 2011.

## AGENDA ITEM 12

### PICES-2010, Portland, Oregon

Science Board agreed, in principle, with the proposed theme for PICES-2010, *North Pacific ecosystems today, and challenges in understanding and forecasting change*, to be held in Portland, Oregon, U.S.A. from October 22–31, 2010. The following sessions and workshops, in order of Committee, were recommended to be convened.

¾-day Science Board Symposium

*North Pacific ecosystems today, and challenges in understanding and forecasting change*

1-day BIO Topic Session (co-sponsored by IMBER)

*Understanding the role of iron in regulating biogeochemical cycles and ecosystem structures in the North Pacific Ocean*

½-day BIO Topic Session (co-sponsored by CoML)

*The Practical Handbook at 50: A celebration of the life and career of Tim Parsons*

½-day BIO Topic Session

*Census of Marine Life: Exploring ocean life. Past, present and future*

1-day BIO Contributed Paper Session

2-day BIO Workshop (co-sponsored by ESSAS)

*Workshop on marine ecosystem inter-comparisons III*

½-day FIS Topic Session

*Oceanographic and demographic processes affecting the reproductive biology of exploited marine stocks*

1-day FIS/BIO Topic Session

*Observations of ecosystem mixing under climate change*

1-day FIS/MEQ Topic Session (co-sponsored by NMFS)

*Economic relation between marine aquaculture and wild capture fisheries*

1-day FIS/POC/BIO Topic Session (co-sponsored by ICES)

*Impact of climate variability on marine ecosystems: Understanding functional responses to facilitate forecasting*

1-day FIS Contributed Paper Session

½-day FIS Workshop

*Beyond Lagrangian: Modeling migratory fish behavior in GCMs*

½-day MEQ Topic Session

*Integrating non-indigenous species with other anthropogenic influences*

½-day MEQ Topic Session

*New and emerging technologies: Applications of genomics for marine ecosystem studies*

½-day MEQ/FIS Topic Session

*Identifying vulnerable marine ecosystems in the North Pacific*

1-day MEQ/FUTURE Topic Session (co-sponsored by IMBER)

*Characterization, understanding, and forecasting the influence of multiple stressors in coastal ecosystems (later renamed to Anthropogenic forcing in the North Pacific coastal ecosystems: Understanding changes in the ecosystem structure and function)*

½-day MEQ/POC/FUTURE Topic Session

*Marine renewable energy development in coastal and estuarine environments around the North Pacific*

½-day MEQ Workshop and ½-day lab demonstration

*New technologies and methods in HAB detection: I. HAB species detection*

1-day MONITOR Topic Session (co-sponsored by ICES)

*Development and use of ocean observing and forecasting systems in coastal and marine management*

1-day POC/BIO/MONITOR/FUTURE Topic Session

*Comparing the two major gyres of the subarctic North Pacific - Seasonal and interannual variability and its predictability*

½-day POC/MEQ/FUTURE Topic Session

*Comparing the two major gyres of the subarctic North Pacific – Seasonal and interannual variability and its predictability*

1-day POC Contributed Paper Session

½-day POC Workshop

*PICES Working Group on Evaluations of Climate Change Projections (Working Group 20): Progress and FUTURE*

2-day POC/BIO Workshop

*Carbon data synthesis (III)*

TCODE E-Poster Session

Science Board recommended that proceedings from the 2010 Science Board Symposium and related papers from Topic Sessions be submitted to an Elsevier journal in time for publications to be referenced in the next IPCC AR5 slated for 2013.

AGENDA ITEM 13

**Selection of PICES-2011, Theme**

Science Board requested more time for further thought on refining the theme for PICES-2011 entitled “*Mechanisms of ecosystem reorganization in the North Pacific Ocean*” (SB Endnote 5) in order that Dr. Dagg could edit the theme. The venue for the Annual Meeting is tentatively Khabarovsk, Russia. Science Board discussed whether the city would be able to meet the needs of the meeting as the distance between venues would not allow participants to move easily between sessions unless a form of transportation such as shuttle buses were used. It was agreed that the proposed venue needs further thought.

**Action:**

Dr. Dagg to edit PICES-2011 theme for clarity.

AGENDA ITEM 14

**High priority PICES activities**

Dr. Skip McKinnell, co-editor of the North Pacific Ecosystem Status Report (NPESR), informed Science Board that the NPESR will be composed of 9 regional chapters and a synthesis/overview. One regional chapter was still outstanding but the Lead Author had indicated that it would be completed. Members of the NPESR synthesis team (editors, lead authors and invited experts) will meet at a workshop from December 1–3, 2009 in Honolulu, U.S.A. to review the regional chapters and develop a draft synthesis of the results. It will also provide an opportunity for the chapters to be formally reviewed by the team. The final text and figures will be ready for publication by March 2010.

Dr. Sinjae Yoo reported on PICES’s involvement in the IMBER summer school on “*Oceans, marine ecosystems, and society facing climate change: A multidisciplinary approach*” (ClimECO2) that will take place August 23–27, 2010 in Brest, France. By having PICES involved with IMBER in a usually Eurocentric event, it is hoped that the number of participating countries and scientific cultures will be broadened, thereby increasing PICES capacity building. Science Board recommended that PICES provide travel support for one early career scientist from each member country. Dr. Yoo will ask each member country to set up a review process for applicants. Science Board nominated early career scientists Hanna Na (Korea), Naoki Yoshie (Japan), and Bryan Black (U.S.A.), with Lu Guan (Canada) as an alternate, to be on the Scientific Steering Committee. It was also proposed that PICES/ICES consider and discuss having one or two members from the previous ECS Conference of 2007 held in Baltimore, U.S.A. to serve as mentors or advisors to the SSC.

AGENDA ITEM 15

**PICES Strategic Plan/Committee Action Plans – Align with FUTURE**

Since FUTURE is the next major scientific plan of PICES, and should be structured to appeal to all the science elements of the Organization, the PICES Strategic Plan will need to be revised. Accordingly, Committee Action Plans will also need to be revised to align with the Strategic Plan. A Study Group on *Updating the PICES Strategic Plan* was formed under Governing Council at PICES-2009. To help with the study, Science Board recommended establishing a subgroup from among the Committee members to review and decide how to align the Strategic Plan with the goals and objectives of FUTURE. The subgroup will be composed of Drs. Bern Megrey, John Stein and Sinjae Yoo who will provide comments that can be discussed by Science Board at the inter-sessional meeting in April 2010.



## AGENDA ITEM 16

**Next inter-sessional Science Board meeting**

Science Board recommended that the next inter-sessional Science Board meeting take place in Sendai, Japan, two days prior to the Symposium on “*Climate change effects on fish and fisheries*”. The meeting will run from April 23–24, 2010 so that one full day can be dedicated to presentation and discussion of FUTURE Advisory Panel workplans. It is usual for the country that hosted the previous Annual Meeting (PICES-2009 in Jeju, Korea) to also host the next inter-sessional Science Board meeting, but because Korea agreed that it was more expedient to hold the Symposium and meeting at the same venue, Korea agreed to commit funding that would have been used for the inter-sessional meeting to a FUTURE-related activity, if held in Korea.

## AGENDA ITEM 17

**Other Business**

Because of the ongoing workload of Secretariat, Science Board recommended that the incoming intern, Ms. Tatiana Semenova, be assigned the task of transferring and linking the PICES digital library to the rented remote server, Adhost. Ms. Semenova will work closely with TCODE (Drs. Bern Megrey and Igor Schevchenko) to effect a seamless transition of data.

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

Harold Batchelder (Chairman,U.S.A.)  
 Michael J. Dagg (Chairman,BIO)  
 Michael Foreman (Chairman,POC)  
 Glen Jamieson (Chairman,MEQ)  
 Bernard Megrey (Chairman,TCODE)  
 John E. Stein (Chairman, Science Board)  
 Mikhail Stepanenko (Chairman,FIS)  
 Hiroya Sugisaki (Chairman,MONITOR)  
 Gongke Tan (representative of China)  
 Sinjae Yoo (representative of Republic of Korea,  
 Science Board Vice-Chairman)

Invited Observers

Mitsutaku Makino (proposed Chairman for Study  
 Group on *Human Dimensions*)  
 Hiroaki Saito (Chairman, COVE-AP)  
 Michael Sinclair (ICES)

PICES Secretariat

Skip McKinnell (Deputy Executive Secretary)

**SB Endnote 2****Science Board Agenda****Sunday, October 25, 2009**

1. Welcome and adoption of agenda
2. Review of procedures for Science Board Symposium and Session awards, and Closing Session
3. Relations with specific international programs/organizations
4. Implementation of Science Board recommendations and Governing Council decisions from PICES 2008 and the 2009 inter-sessional SB/GC meeting
5. Update on SG on Restructuring of the PICES Annual Meeting

**Saturday, October 31, 2009**

6. Report of election of MEQ Committee Chairmen

7. Election of Science Board Chair-elect/Science Board Vice-Chair
8. Relations with specific international programs/organizations (continued)
9. Reports from FUTURE Advisory Committees
10. FUTURE SSC – Planning for 2010 ISB Meeting
11. Recommendations for Part 1 - High Priority Items for SB Report to GC
12. PICES 2010, Portland, Oregon, Theme and description, draft schedule of scientific sessions and workshops
13. Selection of PICES-2011, Theme
14. High priority PICES activities
15. PICES Strategic Plan/Committee Action Plans – Align with FUTURE
16. Next inter-sessional Science Board meeting
17. Other business

**SB Endnote 3**

**Study Group on Human Dimensions for FUTURE**

The Implementation Plan for the FUTURE Science Program (2009) calls for PICES scientists to make the societal implications of their science more explicit and accessible. In particular, Objective 2 “Status Reports, Outlooks, Forecasts, and Engagement” states that long-term engagement and communication activities should be established in PICES.

In addition, as stated in Principle 1 of the Ecosystem Approach of the Convention on Biological Diversity, different sectors view ecosystems in terms of their own economic, cultural and societal needs, *i.e.*, the objective of the ecosystem conservation is “a societal choice”. Therefore, the social significance of predicted impacts induced by the climate or ecosystem changes, and the types of information, advice and guidance that might be requested of FUTURE might differ from country to country and sector to sector.

Therefore, based on sound social and economic science, FUTURE should first survey/assess the needs of a broad group of potential stakeholders for PICES-FUTURE products, and clarify differences in social objectives among stakeholders in different sectors and countries. In order to move toward accomplishing this task, this SG will review the social scientific tools and information on this purpose in PICES member countries, as follows.

- Step 1. Review how social science has been used/applied globally and specifically in PICES nations in ecosystem-based management and the theoretical basis for this practice. This would be an inventory to define best practices. [Sessions 4 and 12 at the annual meeting in Dalian (PICES-2008) provide the initial basis for this work]. This builds upon the results of the WG-19 report on EBM in PICES.
- Step 2. The suggestion by WG19 to establish a long-term group (Section?, referred to as PULSE (PICES Understanding, Linking and Synthesis of Ecosystems)) to synthesize regional and basin-wide ecosystem-based management (EBM) studies and initiatives (ecosystem health) will be considered and the TOR for such a group recommended (using as a basis the suggested TORs for PULSE in WG 19). A specific goal here would be to create a forum attractive to social-scientists so that their participation in PICES would be increased.

In order to fully utilize the limited time frame of the SG (one year) and the outcome of WG-19 report, this SG will mainly focus on ecosystem-based fisheries management (EBFM). Based on the outcome of this SG, and if Science Board approves, a group such as PULSE would be recommended to conduct a comparative study on Member Countries to synthesize differences in management objectives, which would include an assessment of 1) meaningful indicators for human dimensions, 2) social-scientific research needs for better information, and 3) linkages of social science with natural-scientific frameworks for better engagement. Along with the line of FUTURE, this group will expand the scope of analysis from the EBFM to incorporate other anthropogenic and

natural aspects such as hypoxia, ocean health, invasive species, etc (these are examples –exact topics should be decided by the discussion with other natural science groups of FUTURE). All these accomplishments would be reported to Science Board and to other relevant expert groups within PICES, especially the Status, Outlooks, Forecasts and Engagement (SOFE) advisory panel of FUTURE.

#### Tentative Timeline/ Process/ Products from SG

- PICES approves SG (October 2009)
- Members nominated (January 2010)
- SG composition confirmed (February 2010)
- SG meets after email exchange on Step 1
- Step 1 meeting finalizes paper on *Human Dimension Social Science* for EBM - June? 2010 (Inter-sessional Meeting)
- Step 1 meeting plans for process to draft Step 2 report
- SG meets to develop Step 2 report and to develop TOR for WG on Human Dimension
- Step 2 report discussed and finalized at PICES 2010 Meeting
- Final TOR for WG on *Human Dimension* set at PICES-2010

Proposed SG composition: Mitsutaku Makino, Japan and David Fluharty, U.S.A. (co-chairs), with membership: Masahito Hirota (Japan), Keith Criddle (U.S.A.), Ian Perry (Canada), Glen Jamieson (Canada), Dohoon Kim (Republic of Korea), Shang Chen (China), and Olga Lukyanova (Russia).

#### SB Endnote 4

##### **Joint P/ICES Study Group on *Developing a Framework for Scientific Cooperation in Northern Hemisphere Marine Science***

The two major international marine science organizations in the northern hemisphere, ICES (International Council for the Exploration of the Sea) and PICES (North Pacific Marine Science Organization), are focused on different oceans but have in common many scientific issues. In the past 10 years, there have been significant increases in reciprocal exchanges, cooperative sponsorships of scientific meetings and projects, and deeper linkages that have often developed on a case-by-case basis. The objective of this Study Group is to develop a formal framework for cooperation between ICES and PICES to serve as the basis for linkages of our science plans and longer-term strategic planning.

#### Terms of Reference

1. Study Group members will review their organization's existing and planned scientific activities to identify scientific themes that could potentially benefit from the other's involvement in these activities.
2. Lists of potential areas of cooperation will be exchanged by September 2010.
3. A meeting/workshop will be convened after documents are exchanged in spring 2011 to:
  - a. Improve understanding of the science activities of each organization;
  - b. Review scientific topics from TOR(1) to identify areas of common interest;
  - c. As an example of recent cooperation, review progress of the joint Working Group on *Forecasting of Climate Change Impacts on Fish and Shellfish* (WG-FCCIFS) established in 2008;
  - d. Develop a framework for cooperation between ICES and PICES that lists categories of joint activities and the rationale for each, including the benefits to each Organization from the joint activity; identify priorities for joint activities within categories;
  - e. Recommend processes for implementing TOR(3d);
  - f. Recommend approaches to develop a strategic plan for cooperation and mechanisms to periodically update that plan.
4. The Co-Chairmen will prepare a final Study Group report for distribution by the P/ICES Secretariats by August 2011.

## Membership

### PICES (4 members)

- Chairman of Science Board
- Deputy Executive Secretary
- Two Science Board members responsible for Climate and Fisheries & Aquaculture

### ICES (4 Members)

- Chairman of Scientific Committee
- Head of Scientific Programme
- Two Scientific Committee members responsible for Climate and Fisheries & Aquaculture

## SB Endnote 5

### **Theme for PICES-2011 (Russia)**

#### ***Mechanisms of ecosystem reorganization in the North Pacific Ocean***

In recent years, observed variations in marine ecosystems are often attributed to climatic or hydrological changes. Studies of this nature typically were able to demonstrate some correlation with indices of global warming or climatic oscillations of one kind or another. Changes in biological communities were described in terms of their relationships to variation in these large-scale indices. While these studies have produced interesting results, the processes responsible for changing ecosystems in general have not been found, particularly when it comes to understanding how populations, communities, and ecosystems are re-organized from time to time. Complexity masks our understanding of these processes, and it arises from the varying influences of biotic and abiotic factors on scales that vary from populations, to human scales, to the cosmophysical. As a consequence, it is not unusual to find that what has happened in the past can be explained but what will happen cannot because of an inadequate development of ecological theory for oceanic regions. Let us therefore focus a Science Board symposium on describing the mechanisms of ecosystem change and re-organization under the joint influence of factors operating at various frequencies and spatial scales. Applying intellectual energy in this direction will ultimately lead to a better understanding of factors that limit species abundances at various trophic levels. The symposium will lead to a better understanding of the ecological capacities of biotopes, ocean landscapes, and ecosystems.