

Report of the Marine Environmental Quality Committee

The business meetings of the Marine Environmental Quality Committee (MEQ) were held on October 16, 2011 (18:00 to 19:30 hrs) and on October 19, 2011 (14:00 to 18:00 hrs) in Khabarovsk, Russia. Chairman, Dr. Steven Rumrill, called the meetings to order and offered a welcome to all participants. The MEQ members and observers were asked to introduce themselves and to provide a brief statement about their interests and expertise.

AGENDA ITEM 2

Meeting agenda and key MEQ tasks

The agenda for the MEQ business meeting was reviewed and approved by the membership of MEQ (*MEQ Endnote 1*). Dr. Rumrill (USA) and Vice-Chairman, Dr. Mitsutaku Makino (Japan), reviewed key MEQ activities including sponsorship of workshops and topic sessions during the PICES-2011, consideration of proposals for new topic sessions, discussion of project updates by the MEQ expert groups, and discussion of PICES issues related to international cooperation and collaboration.

AGENDA ITEM 3

Implementation of PICES-2010 decisions

MEQ sponsored or co-sponsored the following topic sessions and workshops at PICES-2011 in Khabarovsk, Russia:

- ¾-day Science Board Symposium (S1) on *Mechanisms of ecosystem reorganization in the North Pacific Ocean* (October 17);
- ½-day MEQ Topic Session (S5) on *Harmful algal blooms in a changing world* (October 18);
- ½-day MEQ/FIS Topic Session (S6) on *Identification and characterization of environmental interactions of marine aquaculture in the North Pacific* (October 18);
- 1-day MEQ/FUTURE Topic Session (S7) on *Land-sea interactions and anthropogenic impacts on biological productivity of North Pacific Ocean coastal ecosystems* (October 20);
- 1-day MEQ Workshop (W3) on *Pollutants in a changing ocean: Refining indicator approaches in support of coastal management* (October 14);
- 1-day MEQ Workshop (W2) *Remote sensing techniques for harmful algal bloom detection and monitoring* (October 15).

AGENDA ITEM 4

Relations with other organizations and programs

ICS/SCOR

Dr. Sinjae Yoo, Chairman of Science Board, gave a presentation on SCOR Working Group 137 (*Global Patterns of Phytoplankton Dynamics in Coastal Ecosystems: Comparative Analysis of Time-series Observations*) which operates within the International Council for Science (ICS), Scientific Committee on Oceanic Research (SCOR). The purpose of the presentation was to allow MEQ members to become familiar with the focus area for SCOR WG 137, to seek possible cooperation between PICES and SCOR in the investigation of phytoplankton dynamics, and to solicit interest in participation by PICES as a potential member of WG 137. The overarching objective for WG 137 is to identify and characterize the effects of anthropogenic nutrient inputs and climate change impacts on estuarine and coastal phytoplankton communities. The topic issue encompassed by WG 137 is of interest to the membership of MEQ, and the Committee agreed that it will be in the interest to both PICES and SCOR to continue to discuss potential joint cooperation and collaborations, including a possible workshop at PICES-2012. MEQ offered that was most appropriate to consider a member of the WG 137 from S-HAB.

Group of Experts on Scientific Aspects of Marine Pollution

Dr. Peter Kershaw presented a report on the objectives and activities of GESAMP and potential areas of collaboration with PICES.

Northwest Pacific Action Plan

Dr. Sangjin Lee presented a report on the objectives and activities of the NOWPAP and potential areas of collaboration with PICES.

AGENDA ITEM 5

Status reports from MEQ expert groups

Section on *Ecology of Harmful Algal Blooms in the North Pacific (S-HAB)* (Agenda Items 5-9):

Dr. Vera Trainer, S-HAB Co-Chair, and S-HAB member, Dr. Shigeru Itakura, provided a summary of the activities of the Section over the past year. D-HAB is currently focused on harmonization of datasets, anthropogenic forcing of HAB events, the linked physical-biotic transport of HAB species by onshore and offshore processes, and mitigation for HAB events. The S-HAB workshop (W2) on “*Incorporation of satellite remote-sensing into monitoring of harmful algal bloom events*” at PICES-2011 (October 15) focused was attended by 19 scientists representing Japan, Korea, Russia, China, and the USA. The workshop offered practical demonstrations to contribute to improved understanding of how to gain access to satellite remote sensing data for HAB detection, exploration of the limitations of satellite data, and new programs to aid with data estimations from satellite imagery. The S-HAB meeting (October 16) was attended by 24 scientists representing all PICES member countries (and a representative from GEOHAB), and each country presented a 1-page written report. S-HAB-Section a ½-day Topic Session (S5) on “*Harmful algal blooms in a changing world*” (October 18; ten presentations) which was attended by 35 scientists. S-HAB also developed revised terms of reference (see *S-HAB Endnote 3*), and discussed progress made toward development of the Harmful Algal Event Database (HAE-DAT) and ways to improve web-based access to it. With financial support from the Ministry of Agriculture, Forestry and Fisheries of Japan, representatives from the Section held a planning meeting in Indonesia (September 2011) to identify HAB training needs and to assess the regional level of capacity for HAB detection, and to assess the level of governmental support to sustain HAB activities in the coming years. The HAB training workshop in Indonesia is scheduled to occur in 2012 and will focus on toxin analysis, nutrient analyses, and taxonomic identification of toxic phytoplankton.

Working Group on *Aquatic Non-Indigenous Species (WG 21)* (Agenda items 10-12):

Ms. Darlene Smith, Co-Chair WG 21, presented a summary of WG 21 activities over the past year. The Working Group held their 6th meeting on October 14–15 with 8 members representing 4 PICES countries. Highlights of accomplishments for 2011 include co-sponsorship of the 7th International Conference on Marine Bioinvasions (August 23–25, 2011; Barcelona, Spain), and a demonstration workshop on the Rapid Assessment Survey methodology held at Phuket, Thailand (July 19–21, 2011) which was attended by 30 participants from 8 nations. WG 21 also held the Vostok Bay Rapid Assessment Survey (October 8–14) which was hosted by the Vladivostok Institute of Marine Biology and attended by representatives from all PICES member countries. During the RAS workshop the participants identified over 300 species of marine organisms, and the Working Group is currently completing the taxonomic comparisons to identify native, non-indigenous, and cryptic species. Progress was also made on the WG 21 NIS Database Project, and new database features include the mapping of indigenous and non-indigenous species at a global scale using the MEOW ecoregions and the ability to generate custom NIS atlases. The framework for the PICES-NIS database and atlas was recently published as:

- Reusser, D., and H. Lee, II. 2011. *Evolution of natural history information in the 21st century – developing an integrated framework for biological and geographical data*. *Journal of Biogeography* 38: 1225–1239.

WG 21 plans to hold a third NIS Rapid Assessment Survey demonstration workshop in Nagasaki, Japan, in February 2012 in collaboration with NOWPAP and WESTPAC.

Working Group on *Environmental Interactions of Marine Aquaculture (WG24)* (Agenda items 13-15):

Dr. Katsuyuki Abo, Co-Chair WG 24, presented a summary of the WG 24 activities over the past year. The Working Group held a ½-day Topic Session (S6) on “*Identification and characterization of environmental interactions of marine aquaculture*” (October 18) which included 2 invited speakers, 8 oral and 3 poster presentations. Specific progress was made over the year by WG 24 toward TOR-1 (Evaluation of approaches currently used to assess and model interactions of marine aquaculture) by gathering summary reports prepared by the member countries that focus on the environmental interactions of aquaculture. Summary reports were received from Japan, Korea, Russia, and Canada. The summary report for TOR-2 (Risk assessment methodologies) is in preparation by Co-Chair, Ms. Ingrid Burgetz, and the summary report for TOR-3 (Diseases of concern for marine aquaculture) is also in preparation. Working Group members held a discussion to identify the issues and hurdles that have been associated with achieving the terms of reference, and they identified the following challenges: (1) both PICES Working Groups (WG 18 and WG 24) on aquaculture have faced similar challenges meeting their terms of reference; (2) major differences between participating countries in the maturity of their aquaculture activities and the legislation/policies governing aquaculture may be partially responsible for these challenges; and (3) future aquaculture activities within PICES should be closer tied to the interests, areas of research and needs of the participating countries. WG 24 requested a 1-year extension to the timetable for completion of their final report, and the WG-24 co-chairs will work with Dr. Stewart Johnson (Canada) to complete the final report by September 2012. The members of WG 24 will also develop plans for the possible future development of a specific study group (SG) and accompanying terms of reference for a PICES expert group that will continue to focus on marine aquaculture.

Study Group on *Human Dimensions (SG-HD)* (Agenda items 16-18):

Dr. Mitsutaku Makino presented a summary of the final report completed by SG-HD. The report contains a review of the primary role of social science practices as applied to decision-making for ecosystem-based fisheries management (EBFM) around the world. The final report specifically addresses practical and theoretical implications of EBFM and addresses the following TORs for the Study Group: (1) Review how social science has been used/applied globally and regionally in EBFM; (2) Review the social science tools and information available for EBFM in PICES member countries; (3) Develop an inventory of practices for use of social economic information appropriate to the circumstances in each of PICES member countries; and (4) Summarize the scope of activities and findings of the group and make recommendations on the desirability of establishing an expert group related to socio-economic sciences within PICES. The scope of activities that would be undertaken by a new multi-year Section on *Human Dimensions (S-HD)* was presented. The proposal submitted to the Japanese Trust Fund/MAFF to support the new PICES expert group on Human Dimensions over the period of 2012–2016 was successful, and Dr. Makino discussed the scope of activities that will be supported by the new grant funds.

Working Group on *Ecosystem Indicators to Characterize Ecosystem Responses to Multiple Stressors (WG-28)*

Members of WG 28 held a meeting in Khabarovsk on October 15, 2011. The meeting was attended by 16 participants from 5 PICES member countries. During the meeting, Co-Chairman, Dr. Motomitsu Takahashi, facilitated a review and discussion of the terms of reference for WG 28, a revision of the timeline for work products, and the contributions that can be made by the Working Group toward FUTURE Science Plan goals. WG 28 also discussed progress made during the inter-sessional FUTURE workshop held in Honolulu (April 2011), and formulated proposals for a 1-day workshop (*Identifying critical multiple stressors of North Pacific marine ecosystems and indicators to assess their impacts*) and a ½-day topic session (*Ecosystem responses to multiple stressors in the North Pacific*) to be held at PICES-2012.

AGENDA ITEM 6

Proposed Study Group on *Marine Pollutants (SG-MP)*

Drs. Olga Lukyanova and Peter Ross convened workshop (W3) on “*Pollutants in a changing ocean: Refining indicator approaches in support of coastal management*” at PICES-2011 (October 14) with contributed support from GESAMP, ICES, and IOC. The workshop included presentations by 4 invited

speakers, a series of brief “power-talks”, discussions sessions, and presentation of 6 posters. During the workshop, participants discussed the role and scope of international collaborative work on the issue of marine pollutants and contaminants, and they developed a proposal for a Study Group to report through the MEQ Committee. It is widely recognized that pollution of the North Pacific marine environment has affected fish and wildlife in some regions at the population level, and has led to socio-economic impacts such as commercial fishing closures, barriers to commercial trade, and restrictions on seafood consumption. Improving approaches to pollution assessments among the PICES member countries may help to alleviate many of these problems, and could better inform managers and stakeholders in addressing emerging pollution issues. The purpose of the proposed Study Group is to identify novel or promising approaches to monitoring pollutant trends over space and time, and to evaluate impacts on biota at the population level. The Study Group will establish a list of priority substances and pollutant indicators in PICES member countries using a series of case studies (e.g., microplastics in seawater, seabird egg monitoring for POPs over time; risk-based ranking of complex pollutant mixtures in sediments). This will help identify those methods or approaches that would benefit from harmonization (e.g., characterization of heterogeneous microplastic content in seawater or biota), and improve data delivery and scientific advice to managers and stakeholders. The terms of reference for the proposed Study Group on *Marine Pollutants* are presented in *MEQ Endnote 3*.

AGENDA ITEM 7

Suggested theme for PICES-2013

MEQ members voiced their support for the suggested theme for the next Annual Meeting on “*Communicating forecasts, uncertainty and consequences of ecosystem change to society.*”

AGENDA ITEM 8

Items with financial implications

*Proposed Topic Sessions and Workshops for PICES-2012**

MEQ reviewed and ranked the following proposals for 7 topic sessions and 3 workshops to occur as an integral component of the PICES-2012:

Rank (1-high ... 5-low)	Proposed Topic Sessions
1	<p><u>Title:</u> <i>Social-ecological systems on walleye pollock under changing environment: an interdisciplinary approach (MEQ Endnote 4)</i></p> <p><u>Sponsors:</u> MEQ, FIS, SG-HD</p> <p><u>Duration:</u> 1 day</p> <p><u>Convenors:</u> Mitsutaku Makino (Japan), Keith Criddle (USA), Ian Perry (Canada), Suam Kim (Korea), Anatoly Velikanov (Russia), Yasunori Sakurai (Japan)</p> <p><u>Request for Support:</u> 2 invited speakers</p>
2	<p><u>Title:</u> <i>Ecosystem responses to multiple stressors in the North Pacific (WG 28 Endnote 4)</i></p> <p><u>Sponsors:</u> BIO, MEQ</p> <p><u>Duration:</u> ½ day</p> <p><u>Convenors:</u> M, Takahashi, I. Perry, V. Kulik, J. Samhouri, J. Lee, C. Li</p> <p><u>Request for Support:</u> 1 invited speaker</p>

3	<p><u>Title:</u> <i>Marine macrophyte vegetation as indicators of natural and anthropogenic stressors in coastal ecosystems: A comparison of ecological functions and ecosystem services between the east and west Pacific (FIS Endnote 3)</i></p> <p><u>Sponsors:</u> FIS, MEQ, AICE-AP</p> <p><u>Duration:</u> 1 day</p> <p><u>Convenors:</u> Jun Shoji (Japan), Ik Kyo Chung (Korea), Steve Rumrill (USA)</p> <p><u>Request for Support:</u> 2 invited speakers</p>
4	<p><u>Title:</u> <i>Risk management in coastal zone ecosystems around the North Pacific (MEQ Endnote 5)</i></p> <p><u>Sponsors:</u> AICE-AP, FIS, MEQ, SOFE</p> <p><u>Duration:</u> 1 day</p> <p><u>Convenors:</u> Thomas Therriault (Canada), Masahide Kaeriyama (Japan)</p> <p><u>Request for Support:</u> 2 invited speakers</p>
5	<p><u>Title:</u> <i>Spatial patterns of anthropogenic stress: predators as sentinels of marine ecosystem health (BIO Endnote 3)</i></p> <p><u>Sponsors:</u> BIO (MBM-AP), MEQ, FUTURE</p> <p><u>Duration:</u> 1 day</p> <p><u>Convenors:</u> Peter Ross (Canada), Yutaka Watanuki (Japan)</p> <p><u>Request for Support:</u> 1 invited speaker</p>
6	<p><u>Title:</u> <i>Range extension, toxicity and phylogeny of epiphytic dinoflagellates (S-HAB Endnote 4)</i></p> <p><u>Sponsors:</u> HAB-S / MEQ</p> <p><u>Duration:</u> ½ day</p> <p><u>Convenors:</u> William Cochlan (USA), Satoshi Nagai (Japan)</p> <p><u>Request for Support:</u> 2 invited speakers</p>
7	<p><u>Title:</u> <i>Science needs for offshore oil and gas development in the North Pacific [Science Board did not support this proposal for PICES-2012]</i></p> <p><u>Sponsors:</u> FIS, BIO, MEQ, POC</p> <p><u>Duration:</u> 1 day</p> <p><u>Convenors:</u> Libby Loggerwell (USA), Ken Lee (Canada)</p> <p><u>Request for Support:</u></p>

Rank (1-high ...5-low)	Proposed Workshops
1	<p><u>Title:</u> <i>Identifying multiple stressors of North Pacific marine ecosystems and indicators to assess their impacts (WG 28 Endnote 3)</i></p> <p><u>Sponsors:</u> BIO / MEQ</p> <p><u>Duration:</u> 1 day</p> <p><u>Convenors:</u> M. Takahashi, J. Boldt, V. Kulik, J. Samhuri, C. Zhang, C. Li</p> <p><u>Request for Support:</u> 2 invited speakers</p>

2	<p><u>Title:</u> <i>Harmful algal blooms in a changing world</i> <u>Sponsors:</u> MEQ/PICES, ICES, GeoHAB, NSF(?), NOAA(?) <u>Duration:</u> Plan A – 3 days (Workshop at WG-HABD annual mtg) / Plan B – 5 days (Workshop with NSF/NOAA funding) <u>Convenors:</u> Mark Wells (USA), Bengt Karlson (ICES WG-HABD) <u>Request for Support:</u> 1. PICES travel support for 1 person for workshop planning meeting (late 2011/early 2012) 2. PICES travel support for 4 persons from PICES nations to attend workshop (likely spring 2013)</p>
3	<p><u>Title:</u> <i>The contrasting cases of HABs in the eastern and western Pacific in 2007 and 2011 (S-HAB Endnote 5)</i> <u>Sponsors:</u> MEQ / FUTURE <u>Duration:</u> 2 days <u>Convenors:</u> Changkyu Lee (Korea), Mark Wells (USA) <u>Request for Support:</u> HAB-S request full support for 1 (ideally Japanese) student rapporteur in HAB field with fluency in English writing</p>

* Workshop proposal on “*Harmful algal blooms in a changing world*” is inter-sessional.

Other requests for PICES support

Section on *Harmful Algal Blooms in the North Pacific*

- request funding for 4 PICES members to attend Joint ICES/PICES/GEOHAB/NSF/ NOAA sponsored workshop on Climate Change and HABs in Spring 2012 or 2013.
- Full travel support for 1 person for a joint ICES/PICES/GEOHAB/NSF/NOAA workshop planning meeting in late 2011 or early 2012.
- New HAB-S member requests: Korea – Myeong Soo Han (Hanyang University), Tae Gyu Park (NFRDI); China – Chunjiang Guan (cjguan@nmemc.gov.cn) and HAE-DAT focal point Douding Lu (SOA)
- Travel support for an IOC representative to attend next PICES Annual Meeting to discuss HAE-DAT, country maps and decadal reports (Henrik Enevoldsen, Monica Lion)
- Travel support for 1 Canadian S-HAB member and 1 Russian S-HAB member to attend PICES-2012.
- PICES China delegate to contact the International Cooperation Dept. to request HAB data (from Liqi Chen) for HAE-DAT entry

Inter-sessional activities and meetings

Working Group on *Non- indigenous Species* (WG 21)

- February 8–9, 2012 : a third demonstration RAS workshop in Nagsaki, Japan, in collaboration with NOWPAP and WESTPAC
- March 20–22, 2012: Synthesis workshop to review and revise WG 21 MAFF and Terms of Reference Reports (Newport, OR; Oregon State University – Hatfield Marine Science Center)

Section on *Harmful Algal Blooms in the North Pacific*

- February 2012 S-HAB Training class / Seafood Safety project to take place in Indonesia; PICES/MAFF Funds
- Joint ICES/PICES/GEOHAB/NSF/NOAA workshop planning meeting (late 2011 or early 2012); request full travel support for 1 person

ICES Symposia considered for PICES sponsorship

MEQ provided the following ranking:

1. Ecological Basis of Risk Analysis for Marine Ecosystems (May 2014, Helsinki, Finland),
2. Effects of Fishing on Benthic Fauna and Habitat (May 2014, Tromsø, Norway),
3. Fishery Dependent Information – Making the Most of Fisheries Information (March 2014, Rome, Italy),
4. Gadoid Fisheries: The Ecology and Management of Rebuilding (June 2013, St. Andrew's, Canada),
5. Fifth International Otolith Symposium (October 2014, Palma de Majorca, Spain).

AGENDA ITEM 9

Review and revision of MEQ Action Plan

The current MEQ Action Plan (2006) includes a diversity of topic areas with a specific emphasis on contaminants in the marine environment, harmful algal blooms, environmental aspects of mariculture, and non-indigenous species. Additional activities such as ecosystem-based management and the human dimensions of ecosystem-based fishery management are also included in the scope of MEQ but are not encompassed by the current MEQ Action Plan. The revised MEQ Action Plan for 2012-2016 must include a new mission statement and work-plan to identify and incorporate new and emerging MEQ elements, to support progress toward achievement of the FUTURE Science Plan, and to correspond with the new organizational vision for PICES described by the new PICES Strategic Plan.

Dr. Rumrill presented a new draft mission statement for MEQ (see *MEQ Endnote 6*) and discussed the need to gain input and ideas over the next year to develop all of the new components of the revised MEQ Action Plan.

AGENDA ITEM 10

Report on FUTURE

Dr. Thomas Therriault, Chairman of AP-AICE, provided a progress report on FUTURE activities.

AGENDA ITEM 11

Other business

None

MEQ Endnote 1**MEQ participation list**Members

Ik Kyo Chung (Korea)
Shigeru Itakura (Japan)
Kunio Kohata (Japan)
Changkyu Lee (Korea)
Olga Lukyanova (Russia)
Mitsutaku Makino (Japan, Co-Chairman)
Steven Rumrill (USA, Chairman)
Darlene Smith (Canada)
John Stein (USA)
Thomas Therriault (Canada)

Observers

Katsuyuki Abo (Japan)
Peter Kershaw (GESAMP)
Sangjin Lee (NOWPAP)
Peter Ross (Canada)
Shigeru Itakura (Japan)
Alexander Tkalin (NOWPAP)
Vera Trainer (USA)
Sinjae Yoo (Science Board Chairman)
and others

MEQ Endnote 1

MEQ meeting agenda

1. Welcome / introduction of MEQ Committee members and observers
2. Approval of MEQ meeting agenda
3. Implementation of PICES-2010 decisions
4. Relations with other organizations and programs
 - SCOR WG-137 Global Patterns of Phytoplankton Dynamics (at request of Dr. Sinjae Yoo; Korea)
 - GESAMP (Dr. Peter Kershaw)
 - NOWPAP (Drs. Sangjin Lee/Alexander Tkalin)
5. Status reports from MEQ expert groups
 - Section on *Harmful Algal Blooms* (Dr. Vera Trainer; USA / Dr. Changkyu Lee; Korea)
 - Working Group on *Aquatic Non-Indigenous Species* (Ms. Darlene Smith; Canada)
 - Working Group on Environmental Interactions of Marine Aquaculture (Dr. Ingrid Burgetz, Canada/Dr. Brett Dumbauld, USA./Dr. Katsuyuki Abo, Japan)
 - Study Group on *Human Dimensions* (Dr. Mitsutaku Makino, Japan)
 - Working Group on *Ecosystem Indicators to Characterize Ecosystem Responses to Multiple Stressors*
6. Discussion of MEQ marine contaminants and microplastics issue and Terms of Reference for potential MEQ Study Group on *Marine Pollutants* (SG-MP; Dr. Olga Lukyanova, Russia; Dr. Peter Ross, Canada)
7. Suggested for theme for PICES 2013 / Nanaimo, Canada
8. Items with financial implications for 2012
 - a) Review & rank proposed topics sessions & workshops
 - b) Proposed inter-sessional meetings
 - b) Travel support requests
 - c) Review of 5 ICES symposia for possible PICES sponsorship
 - d) Other items
9. Review and revision of MEQ Action Plan / Mission Statement (Dr. Steven Rumrill, USA)
10. Report on FUTURE (Dr. Tom Therriault, Canada; AP-AICE)
11. Other MEQ business
12. Annual MAFF Progress Report on S-HAB and WG 21 activities (Dr. Glen Jamieson, Canada)

MEQ Endnote 3

Terms of Reference for the Study Group on Marine Pollutants (SG-MP)

1. Identify novel or promising approaches to operational marine pollution assessment in PICES member nations by:
 - a. establishing a list of priority pollutant concerns for each of the PICES countries;
 - b. identifying useful indicators of status, trends and effects; and
 - c. identifying those issues or methods that would benefit from harmonization.
2. Identify interactions within PICES scientific committees, Advisory Panels, working groups, and sections that will complement the SG and will be consistent with the ecosystem approach espoused by FUTURE.
3. Explore potential partnerships with other professional or multilateral organizations (e.g. NOWPAP, ICES, GESAMP) which could lead to joint activities (working group, sessions, publications), improve efficiencies and strengthen scientific outcomes.
4. Develop recommendations for a possible PICES WG on marine pollutants.

MEQ Endnote 4**Proposal for a 1-day MEQ/FIS [later changed to MEQ/FUTURE] Topic Session on
Social-ecological systems on walleye pollock under changing environment: an inter-disciplinary approach
at PICES-2012**

In order to build bridges between scientists, decision-makers, stakeholders, and across sectors, there is a need for more in-depth and concrete inter-disciplinary research framework in the context of the PICES integrative science program FUTURE. One of the typical groundfish resources in the North Pacific, pollock is highlighted to facilitate such academic discussions under the PICES framework. Research on walleye pollock from the perspectives of ecology, biology, stock dynamics, harvesting, fisheries management, history, marketing, processing, international trade, consumption, culture will be presented. Inter-relationships among these varied perspectives, information needs, potential values for other disciplines, etc., will be discussed during this topic session. An expected outcome of this session will be a holistic framework for the inter-disciplinary research, which could be applied to other species.

MEQ Endnote 5**Proposal for a 1/2-day FUTURE/FIS/MEQ Topic Session on
“Risk management in coastal zone ecosystems around the North Pacific” at PICES-2012**

Currently, approximately 60% of the world’s population lives within 60 km of the coast and this number is expected to reach 75% within the next two decades due to increased population growth. The coastal zone is an extremely complex environment that includes both coastal, nearshore marine and estuarine ecosystems and the adjacent terrestrial area. Human populations around the North Pacific rely heavily on this zone for their livelihood but growing pressures from increasingly diverse human activities coupled with climate change and natural catastrophes (e.g., earthquake and tsunami) threaten the sustainability and productivity of coastal ecosystems. Risk management based on adaptive management and precautionary principles, is one way to prioritize, identify, and potentially mitigate impacts resulting from diverse human activities in coastal zones. This session will focus on the following issues:

- 1) Preparation and countermeasures to respond to natural catastrophes
- 2) Protection of coastal zone ecosystems from human-mediated impacts (e.g., habitat loss, pollution, harmful algal events, invasive species)
- 3) Institution and protection of marine protected areas (MPAs)

MEQ Endnote 6**Draft MEQ Mission Statement for 2012–2016**

The PICES Marine Environmental Quality Committee (MEQ) serves as the Scientific Committee that encourages, facilitates, and conducts multi-national investigations of the status, conditions, and trends in the environmental characteristics of coastal, nearshore, and offshore North Pacific marine ecosystems. The primary scope of responsibility for the MEQ Committee is to promote and coordinate marine environmental quality and interdisciplinary research to gain a better understanding of the sources and fates of contaminants in the marine environment, the ecology of harmful algal blooms, marine environmental quality aspects of mariculture, the transport and introduction of non-indigenous species and stocks, and to foster increased appreciation regarding the human dimensions and societal importance of changes in North Pacific marine and coastal ecosystems.

During the planning period of 2012-2016, the MEQ will provide organizational support, guidance, and a forum for discussion, cooperation, and collaboration on a variety of issues related to the status, condition, and quality of marine ecosystems. More specifically, the MEQ will serve as the standing PICES Scientific Committee that

provides support for the Harmful Algal Blooms – Section (HAB-S), the Working Group on Marine Non-Indigenous Species (WG-21), the Working Group on Marine Aquaculture (WG-24), the Working Group on Multiple Stressors in the Marine Environment (WG-28), the Study Group on Human Dimensions (SG-HD; HD-Section), and the proposed Study Group on Marine Contaminants (SG-MC). In addition, the MEQ also serves as the organizational liaison for cooperation and collaboration with other PICES Scientific and Technical Committees, PICES Advisory Panels, the PICES Science Board, and the PICES Governing Council. Marine environmental quality is a complex concept that has many interpretations, and these understandings may incorporate qualitative and quantitative information as well as multiple indices generated by the natural and social sciences. Consequently, it is important to note that the PICES member nations have may have different, complementary, or opposing perspectives and approaches to the assessment and management of marine and coastal environmental quality issues. These different perspectives and approaches will influence the scope, direction, and relative priorities placed on research needs and generation of scientific recommendations. It is also important that the efforts undertaken by the PICES MEQ are focused to generate findings, work products, and recommendations that are of direct utility to organization as a whole and to the member countries.