



## 2011 PICES Science: A Note from the Science Board Chairman

2011 saw another busy year for the PICES community. PICES continued to demonstrate excellence in many areas for advancing marine science in the North Pacific. These included the co-sponsoring of meetings, publication of special issues in primary journals, planning and conducting capacity developments activities, facilitating international cooperation with other organizations and programs and, most of all, moving forward with FUTURE (Forecasting and Understanding Trends, Uncertainty and Responses of North Pacific Marine Ecosystems), the flagship scientific program of PICES.

To begin with, PICES co-sponsored many meetings and symposia during the year. Through the organization of these scientific meetings, the aim of PICES was not only to facilitate the exchange of ideas and information among scientists, but to develop international collaborations across disciplines, institutions, and national boundaries. Since last year's Annual Meeting in Portland (U.S.A.), PICES was extremely busy in making logistical and financial arrangements for more than 20 inter-sessional symposia, sessions, workshops and meetings convened at various locations around the North Pacific and the world at large. A major highlight was the 5<sup>th</sup> International Zooplankton Production Symposium on "Population connections, community dynamics, and climate variability" held in

March 2011, in the scenic town of Pucón, Chile. PICES and ICES (International Council for the Exploration of the Sea) were the major sponsors along with COPAS (Center for Oceanographic Research in the Eastern South Pacific), Universidad de Concepción. Although most of the Japanese contingent was unfortunately unable to make the meeting due to the devastating tsunami that had occurred off Honshu just two days before the start of the symposium, almost 300 scientists from 36 countries were in attendance, making this event, only the second to be held outside of Europe, an outstanding success.



*The Amur River encased in a golden glow at dusk.*

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Participants of the Governing Council meeting posing in front of the Conference Hall in Khabarovsk: (front row, from left) Vladimir Radchenko (Russia), John Stein (U.S.A.), Lev Bocharov (Russia), Laura Richards (Canada), Chul Park (Korea), Hyun Taek Lim (Korea), Yukimasa Ishida (Japan) and Gongke Tan (China); (back row, from left) Alex Bychkov (PICES Secretariat), Igor Shevchenko (Russia), Patricia Livingston (U.S.A.), David Gillis (Canada), Darlene Smith (Canada), Kyung-Chul Lee (Korea), Yieren Li (China), Ungyul Yi (Korea), Yingren Li (China), Taro Ichii (Japan), Masaki Sugamiya (Japan), Oleg Katugin (Russia) and Dosoo Jang (Korea).

The Pucón symposium was followed in quick succession by the 2<sup>nd</sup> inter-sessional workshop of our FUTURE program (April), and then by the 2<sup>nd</sup> ESSAS (Ecosystem Studies of Sub-Arctic Seas) Open Science Meeting (May), with PICES providing organizational support and travel support for a number of early career scientists to attend the meeting. The FUTURE workshop on “*Indicators of status and change within North Pacific marine ecosystems*” focused on various issues related to ecosystem-level indicators and assessments, ecosystem resilience, and indicator uncertainty. Discussions eventually led to the formulation of a new FUTURE-related working group (see more on this group later in the article). A detailed account of the workshop can be found in the 2011 summer issue of PICES Press (Vol. 19, No. 2). In October, just prior to the 2011 PICES Annual Meeting, a joint PICES/ICES workshop on “*Development and application of Regional Climate Models (RCM)*” was held in Seoul, Korea. The workshop dealt with various aspects of regional climate modeling such as different approaches, downscaling, parameterizations, and coupling to General Circulation Models. It also covered the coupling of RCMs to ecosystem models. Discussions at the workshop guided the development of another new FUTURE-related working group (more on this group later in the article).

A standard way to keep a record of scientific findings from such meetings and other activities is through PICES publications. Highlights from primary journal issues in 2011 include:

- a special issue of the *ICES Journal of Marine Science* (Vol. 67, Is. 9) based on papers from the 2009 ICES/PICES/UNCOVER Symposium on “*Rebuilding depleted fish stocks: Biology, ecology, social science, and management strategies*” held in Warnemünde, Germany;

- a special issue of the *ICES Journal of Marine Science* (Vol. 68, Is. 6) based on papers from the 2010 PICES/ICES/FAO Symposium on “*Climate change effects on fish and fisheries*” held in Sendai, Japan;
- a special issue of *Fisheries Research* (Vol. 122, Is. 3) based on selected papers from the PICES-2009 Topic Session on “*Ecosystem-based approaches for the assessment of fisheries under data-limited situations*”.

Several publications are expected in the near future from the 2011 meetings mentioned above. The development of a comprehensive non-indigenous species database and an atlas on non-indigenous marine and estuarine species in the North Pacific has been completed by Working Group on *Non-indigenous Aquatic Species*. The atlas has been peer-reviewed and is now ready to be published on-line. This vast assemblage of biological characteristics and global distribution of 700 non-indigenous aquatic species is 1,800 pages long. It is a major achievement of the Working Group and is an exemplary FUTURE product. In addition, other special publications are in progress and you will see more coming soon.



Fall foliage of the Amur River park near the main venue of the 2011 PICES Annual Meeting, Khabarovsk, Russia.

One of PICES' roles, as stated in the Convention and Strategic Plan of the Organization, is to respond to requests from the Contracting Parties and other organizations to provide advice on scientific issues. In 2010, the Canadian *Commission of Inquiry into the Decline of Sockeye Salmon in the Fraser River* asked PICES for advice on the status and trends of marine ecosystems where Fraser River sockeye are known to occur and on potential effects of recent ecosystem variability on their survival, distribution and migration. In response to this request, an advisory report on "*The decline of Fraser River sockeye salmon *Oncorhynchus nerka* (Steller, 1743) in relation to marine ecology*" was developed by a team that was led by Dr. Skip McKinnell and included Drs. Enrique Curchitser, Masahide Kaeriyama, Kees Groot and Katherine Myers. The report was presented to the Commission and is now available as Technical Report No. 4 at the Cohen Commission website (<http://www.cohencommission.ca/en/TechnicalReports.php>). This is an excellent example of a FUTURE product that engages with society.

Capacity building has always been a high priority issue for PICES, and we continued our many capacity building activities in 2011. The training workshop on "*Rapid assessment survey (RAS) methodologies for detecting non-indigenous marine species*", organized jointly with WESTPAC (IOC Sub-Commission for the Western Pacific), took place from July 19–21, 2011, in Phuket, Thailand. More than 25 researchers from 8 countries, mostly from Southeast Asia, participated in this event. Planning is in progress for another methodological RAS workshop in 2012, in collaboration with FRA (Fisheries Research Agency, Japan), NOWPAP (Northwest Pacific Action Plan) and WESTPAC. PICES also sponsored a training course on "*Remote sensing data analysis*", again with NOWPAP and WESTPAC, held October 8–12, 2011, in Vladivostok, Russia. The course, consisting of lectures by experts and hands-on tutorial sessions on analysis of satellite data to monitor and assess the coastal and marine environment, was attended by 22 trainees from 7 countries. Travel funds were provided for three early career scientists from PICES member countries (Canada, China and U.S.A.) to join the 5<sup>th</sup> SOLAS Summer School, a biennial, international event teaching a variety of fields, held from August 29 to September 10, 2011, in Corsica, France. PICES also supported the travel of eight graduate students and four postdoctoral fellows from Canada and U.S.A. to participate in the 7<sup>th</sup> International Conference on Marine Bioinvasions convened from August 23–25, 2011, in Barcelona, Spain. For the 2011 PICES Annual Meeting, more than 40 travel grants were provided to students and early career scientists.

Summing up scientific activities in 2011 was the Annual Meeting, PICES-2011, held October 14–23, 2011, in the picturesque city of Khabarovsk, Russia. The meeting was hosted by the Russian Federal Agency for Fisheries in

cooperation with the government of the Khabarovsk Region and in coordination with the PICES Secretariat. Local arrangements were made by the Pacific Research Fisheries Centre (TINRO-Centre) and the Khabarovsk branch of TINRO-Centre. We thank Prof. Vyacheslav Shport, Governor of Khabarovsk Region, and Dr. Vasily Sokolov, Deputy Head of the Federal Agency for Fisheries, for giving opening remarks on behalf of the host country. The overall theme for PICES-2011 was "*Mechanisms of marine ecosystem reorganization in the North Pacific Ocean*", and the meeting covered a broad range of timely and very relevant marine science issues. About 330 scientists and managers from 17 countries and 28 international and regional organizations and programs attended 12 sessions, 4 workshops and 23 business meetings of our standing committees and their expert groups and presented about 200 talks and 140 posters.



A time to mingle as well as discuss science at the Poster Session.



Drs. Toshitaka Gamo, Tomoharu Senju, Joji Ishizaka and Toru Suzuki looking for directions to either a cultural event or a place to have a good beer.

It was with both great sadness and pleasure to announce that the 2011 Wooster Award was given posthumously to Dr. Bernard Megrey who suddenly passed away in 2010. We will remember his great contributions to PICES and

fisheries science. The 2011 PICES Ocean Monitoring Service Award (POMA) went to the NFRDI Serial Oceanographic Observation Network (NSO), Korea. NOS has monitored the marginal seas of the Northwest Pacific for many decades since the 1920s, providing data with clear signals of regime shifts and warming. We also presented awards for best oral presentations and posters, and I encourage you to visit the PICES website (<http://www.pices.int/publications/presentations/>) to see who the worthy recipients were this year.



Mrs. Ronette Megrey accepting the 2001 Wooster Award on behalf of her late husband, Bernard.

The PICES Strategic Plan was originally developed and approved in 2004, and there has been an urgent need to update it in light of changes that have taken place since then, such as the implementation of our second integrative science program, FUTURE, and to ensure that the Plan reflects the vision of all Contracting Parties for the direction of PICES over the next 5–10 years. A revised draft of the Plan that has been prepared during the past year was finalized at PICES-2011. In the coming months, every PICES standing committee will revise its Action Plan to bring it in line with the new Strategic Plan.



WESTPAC observer, Dr. Apple Chavanich, listening attentively with Working Group on Non-indigenous Aquatic Species members, Drs. Hisashi Yokoyama and Takeo Kurihara, at the Working Group meeting during PICES-2011.



Taking aim during the host country's sporting event at the indoor rifle range at the Army Sport Club in Khabarovsk.

At PICES-2011, some leadership changes took place. Elizabeth Logerwell (U.S.A.) replaced Mikhail Stepanenko (Russia) as Chair of the Fishery Science Committee (FIS), and Xianshi Jin (China) replaced Gordon Kruse (U.S.A.) as FIS Vice-Chair. Won-Duk Yoon (Korea) replaced Young-Shil Kang as Co-Chair of the Working Group on *Jellyfish Blooms around the North Pacific Rim: Causes and Consequences*. I thank the outgoing Chairs and Co-Chairs for their dedicated service, and welcome the new Chairs onboard.



Two Chairs (Dr. Sinjae Yoo, Science Board and Dr. Lev Bocharov, PICES) enjoying the Closing Session.

As many of the scientific and capacity building issues addressed by PICES are not confined to the North Pacific, but are shared by other parts of the world, it is important to promote cooperation with other international scientific organizations and programs of regional and global scale. At PICES-2011, we discussed and approved joint activities and future plans for collaboration with ICES, IOC (Intergovernmental Oceanographic Commission of UNESCO), SCOR (Scientific Committee on Oceanic Research), IMBER (Integrated Marine Biogeochemistry and Ecosystem Research), WESTPAC, NOWPAP, LOICZ (Land-Ocean Interactions in the Coastal Zones), and SOLAS (Surface Ocean - Lower Atmosphere Study),

among others. I expect that cooperation with these and other international organizations and programs will continue to be strengthened. With ICES, in particular, PICES has been developing a framework for cooperation through a joint Study Group on *Developing a Framework for Scientific Cooperation in Northern Hemisphere Science* (SG-SP) since 2009. SG-SP prepared a draft plan, which was approved at the annual meetings of each organization. This was especially significant as it specifies a formal framework that will serve as the basis for linking ICES and PICES science plans, and for longer-term strategic planning between the two organizations.

Beside the exciting scientific exchanges and communication at the forum of the Annual Meeting, the most important progress made during PICES-2011 was the formation of new expert groups to advance FUTURE. Although FUTURE has been active into its second year, it still did not have enough workhorses. Earlier in 2011, two new working groups were established: Working Group on *North Pacific Climate Variability and Change* (WG 27) and Working Group on *Development of Ecosystem Indicators to Characterize Ecosystem Responses to Multiple Stressors* (WG 28). At PICES-2011, the Governing Council, at the recommendation of Science Board, approved four more new expert groups: two sections, one working group and one study group.

The first one is the Section on *Climate Change and Marine Ecosystems* (S-CCME), which is a sequel to the joint ICES/PICES Working Group on *Forecasting of Climate Change Impacts on Fish and Shellfish* and will continue to be a joint effort of ICES and PICES. S-CCME's major goal is to perform a regional synthesis of future projections of ecosystem change and communicate research findings to the outside world. To do this S-CCME will use the global model outputs from the Intergovernmental Panel on Climate Change (IPCC) in making regional predictions which can, in turn, be incorporated into the next synthesis on the part of the IPCC. It will work with many expert groups within the FUTURE framework, acting at the same time as an interface with IPCC and ICES.



Two Co-Chairs (Drs. Anne Hollowed and Suam Kim) fine tune terms of reference for the new Section on Climate Change and Marine Ecosystems.



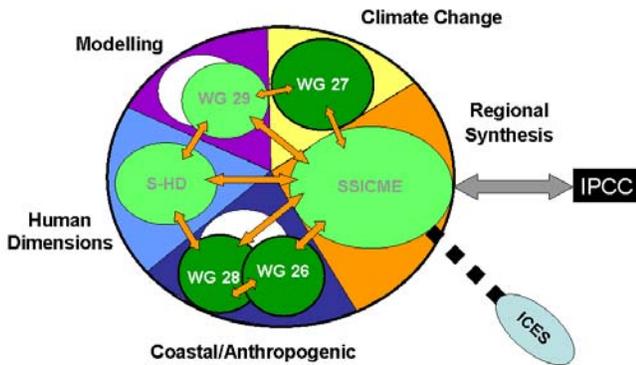
Dr. Sinjae Yoo chairing the joint FUTURE Advisory Panel meeting at PICES-2011 (top), with Drs. Yukimasa Ishida and Akihiko Yatsu listening in.

The Section on *Human Dimensions of Marine Systems* (S-HD) has an important bearing on FUTURE in that it will explore the consequences to, and responses of, human social systems to climate-induced changes in marine ecosystems. It will also deal with communication issues. This Section will facilitate academic cooperation with other international research efforts such as ICES, IMBER, and LOICZ. Thus S-HD will work not only on the key scientific questions on the interactions between human societies and ecosystems but also on developing FUTURE products.

Working Group on *Regional Climate Modeling* (WG 29) is established to facilitate regional-scale modeling. While global climate models capture large-scale climate behavior, they have limitations for regional assessments due to their coarse spatial resolutions. Therefore, regional climate modeling skill is needed to implement mesoscale features which are particularly important in the North Pacific and its marginal seas. The role of this Working Group is vital in making regional predictions.

Lastly, the Study Group on *Marine Pollutants* (SG-MP) will identify novel or promising approaches to monitor pollutant trends over space and time and to evaluate impacts on biota at the population level. SG-MP will lay foundations to address the key question of FUTURE: *How do human activities affect coastal ecosystems and how are societies affected by changes in these ecosystems?*

With these new and existing expert groups, FUTURE now has enough power to move forward. However, more elements mean a need for better coordination. Complicated connections among expert groups require well-planned coordination with specified products and information flows. The scope, role, and duration of each expert group should be clearly defined within the big picture. These issues will be discussed and hopefully resolved at the inter-sessional FUTURE workshop planned in May 2012.



The FUTURE clockwork starts to tick.



Participants of the “Pollutants in a changing ocean” workshop posing at the entrance to the Conference Center in Khabarovsk.



Local organizers from TINRO-Centre Eugeny Mirzazyanov, Tanya Semanova, Ekaterina Kurilova (Khabarovsk branch) and Anna Skvortsova being acknowledged for their hard work in making the Meeting a success.

To conclude, I will give a brief preview of the planned activities in 2012. In February 8–9, the workshop on “Introduction to Rapid Assessment Survey methodologies for detecting non-indigenous marine species” will be held in Nagasaki, Japan. This is a continuation of the capacity building activities of 2011. The second joint PICES/ICES Early Career Scientist conference, titled “Oceans of change” will take place from April 24–27, 2012, in Calviá Majorca, Spain (<http://www.ices.dk/marineworld/oceans/index.asp>). The goal of this conference is to encourage future generations of ocean scientists from the Atlantic and North Pacific meet early in their careers to establish long lasting links and collaborations with each other. Another capacity building event is the IMBER-led international ClimECO3 summer school on integrated earth system models in July 2012 in Turkey. PICES will support early career scientists to attend the summer school. I would like to welcome you to take part in the second international symposium on the “Effects of climate change on the world’s oceans” to be held May 14–20, 2012, in conjunction with Ocean Expo-2012 in Yeosu, Korea (<http://www.pices.int/climatechange2012.aspx>). As with the first successful symposium held in Gijón, Spain, in 2008, PICES will again be working with ICES and IOC on preparations for the second symposium. Immediately following this symposium, an inter-sessional Science Board meeting and a third FUTURE Workshop will take place from May 22–25, 2012, in Busan, Korea.

Finally, our next annual meeting, PICES-2012, will be held from October 12–21, 2012, in Hiroshima, Japan. The theme is “Effects of natural and anthropogenic stressors in North Pacific ecosystems: Scientific challenges and possible solutions”. Many interesting sessions and workshops, covering a wide range of topics, are planned. In summary, we have another busy, yet exciting, year ahead of us.



Sinjae Yoo  
Science Board Chairman