

PICES Press



Newsletter of the North Pacific Marine Science Organization (Published semi-annually)



The state of PICES science – 2004

PICES “Year-in-Review” 2004

The success of PICES, now and into the future, is being built upon three pillars: scientific excellence, scientific advice, and scientific capacity.

Scientific excellence includes publications, working group activities, workshops and symposia. PICES has been very productive scientifically, with five issues of primary scientific journals on PICES topics and one scientific report being published to date in 2004. These include:

- *Marine Environmental Research* 57(1-2) (March 2004) – papers from the Marine Environmental Quality Committee’s Practical Workshop (Guest editor: R. Addison);
- *Journal of Oceanography* 60(1) (February 2004) – invited papers on North Pacific JGOFS Synthesis (Guest Editors: T. Saino, A. Bychkov, C.T.A. Chen and P. Harrison);
- *Progress in Oceanography* 61(2-4) (June 2004) – papers from the PICES/CREAMS workshop on East Asian Marginal Seas (Guest editors: S. McKinnell, A. Bychkov, K.-R. Kim and M. Terazaki);
- *ICES Journal of Marine Science* 61(1) (June 2004) – papers from the 3rd International Zooplankton Symposium (published jointly with GLOBEC and ICES; Guest editors: L. Valdez, R. Harris, T. Ikeda, S. McKinnell and W. Peterson);

- *Journal of Marine Systems* 50(1-2) (September 2004) – papers from the PICES 2002 Topic Session on biophysical coupling and topography (Guest editors: J. Dower and R. Brodeur).

Three other scientific reports are expected before the end of 2004. A measure of the scientific impact of these publications is provided by the *Elsevier* publications website which, as of September 2004, indicated that of the top 25 downloaded publications from journals in which PICES has special issues, papers published by PICES occupied positions numbered 2, 3, 5, 6, 12, 16, 18, 20 in *Progress in Oceanography* and 2, 9, 11, 13, 24 in *Marine Environmental Research*.

PICES-sponsored and co-ordinated research continues to be active on the water. The Continuous Plankton Recorder project conducts meridional transects in the Northeast Pacific 5-6 times annually, and zonal transects across the North Pacific 3 times annually using commercial ship-of-opportunity vessels. And just one week prior to the PICES Thirteenth Annual Meeting, the Advisory Panel on *Micronekton sampling inter-calibration experiment* hosted a field survey off Hawaii in which they conducted inter-comparisons of systems typically used to sample micronekton in the North Pacific. Preliminary results from this survey are presented elsewhere in this Newsletter.



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Another indication of PICES' scientific excellence is the North Pacific Ecosystem Status Report, which is available in pre-publication form from the PICES web site, and is expected to be published shortly. The scientific content of this report was approved by Science Board at its second inter-sessional meeting in May 2004, in Jeju, Korea. This report provides an analysis of the thirteen PICES regions in the North Pacific and a synthesis which integrates the status of all these regions. In general, although there are local and regional stresses in the marine ecosystems of the North Pacific, there have also been successes where marine populations are doing well.

The extent of scientific meetings, and the successes of the Thirteenth Annual Meeting also indicate the vibrant scientific life of PICES. Over the past year, PICES has convened or co-sponsored 19 meetings and workshops, including monitoring in the North Pacific, modelling lower trophic level production and linkages to fish, biogeochemical processes and data integration related to carbon cycling and iron enrichment experiments, and ecosystem indicators for fisheries management.

The Thirteenth Annual Meeting of PICES, held October 14-24, 2004, in Honolulu, Hawaii, hosted 403 registered participants, 11 scientific sessions, 6 workshops, and several Working Group, Task Team and Advisory Panel meetings. There were 227 oral presentations, 122 posters and 7 electronic posters. The theme of the meeting was "Beyond the continental slope - complexity and variability in the open North Pacific Ocean". Dr. Jeffrey Polovina presented the Keynote Lecture, titled "Send out the turtle fleet!", in which he described the use of radio-tagged turtles to examine oceanic habitats and migration pathways of these animals in the sub-tropical North Pacific.

This presentation was followed by the theme session for PICES XIII, which considered issues of complexity and variability in the open North Pacific. Papers dealt with causes and potential predictability of the Pacific Decadal Oscillation, with large-scale environmental monitoring of physical conditions and circulation in the North Pacific, with regime-like changes in lower and upper trophic levels of the sub-tropical North Pacific, and with classification of marine pelagic environments in the open North Pacific Ocean. Variability, on both large and small temporal and spatial scales, is a dominant feature of these sub-tropical open ocean ecosystems, which is in marked contrast to the traditional view. Other sessions (and lively discussions) were held on "Mechanisms that regulate North Pacific ecosystems: Bottom up, top down, or something else?", "Hot spots and their use by migratory species and top predators in the North Pacific", "Introduction of marine species", "Marine protected areas", "Application of global observing systems to physics, fisheries, and ecosystems", "The impacts of climate change on the carbon cycle in the North Pacific", "The impacts of large-scale climate change on North Pacific marine ecosystems", among other topics.

Several workshops, which provided more time for discussion, were held both before and after the main meeting on topics that included "Scale interactions of climate and marine ecosystems" (co-sponsored with CLIVAR), "The seasonal cycle of plankton production in continental shelf waters around the Pacific Rim", and "Linking open ocean and coastal ecosystems". Brief summaries of these sessions including discussions are published in the PICES Annual Report for 2004.



Dr. Ian Perry summarizing PICES scientific achievements of 2004 at the PICES XIII Opening Session.



Dr. Jeffrey Polovina giving the Keynote Lecture at the PICES Thirteenth Annual Meeting.

The Best Paper Award during the Science Board Symposium went to Dr. Akihiko Yatsu (Japan) for his oral presentation (co-authored with Masatoshi Moku, Hiroshi Nishida, Kaoru Takagi, Norio Yamashita and Hiroshi Ito), titled "Possible ecological interactions between small pelagic and mesopelagic fishes in the Kuroshio – Oyashio Transition Zone and Kuroshio Extension in spring". Dr. Oleg Katugin received an Honourable Mention for his oral presentation (co-authored with Gennadiy Shevtsov) in the



Scientists who received Best Presentation Awards and recognition at PICES XIII. Their presentations can be found on PICES' website (just click on presentation photo on the main page <http://www.pices.int>).

Science Board Symposium, titled "Patterns of distribution and biology of the North Pacific oceanic squid *Berryteuthis anonychus* with implications for the species life cycle". The Best Poster Award went to Dr. Katsuya Suzuki for his poster (co-authored with Tsutomu Takagi, Shinsuke Torisawa and Kazushi Miyashita), titled "Video analysis of the schooling behavior of Japanese surfsmelt (*Hypomesus japonicus*) under light and dark conditions using a mathematical model". The Best Presentation Award from the BIO Committee went to Akinori Takasuka for his paper (co-authored with Yoshioki Oozeki, Ichiro Aoki, Ryo Kimura, Hiroshi Kubota and Takashi Yamakawa), titled "Differential optimal temperatures for growth of larval anchovy and sardine: a potential mechanism for regime shifts?" Honourable Mention from the BIO Committee went to Vladlena Gertseva for her paper (co-authored with Thomaas Wainwright and Vladimir Gertsev), titled "Juvenile salmon survival in coastal waters of the Northeast Pacific Ocean: top-down or bottom-up control?" The FIS Committee Best Presentation Award went to Scott Gende for his paper "Persistence of prey "hot spots" in southeast Alaska" (co-authored with Mike Sigler). The MEQ Committee Best Presentation Award went to Jennifer Boehme for the paper "Ballast water exchange verification using optical characteristics of dissolved organic matter" (co-authored with Mark Wells). The Best Presentation in the POC Committee went to Sabine Mecking for her paper "Age and AOU increases at the North Pacific subtropical-subpolar gyre boundary" (co-authored with Mark Warner and John Bullister). The Best Presentation Award from the TCODE Technical Committee went to Mukti Zainuddin for his electronic poster on "Spatio-temporal dynamics of albacore fishing ground and environmental conditions detected by remotely sensed satellite data" (co-authored with Katsuya Saitoh and Sei-ichi Saitoh). The Best Presentation from the CCCC Program went to Hyun-Cheol Kim for his paper (co-authored with Sinjae Yoo and Im

Sang Oh) on "Relation between phytoplankton blooming and wind stress in the central Japan/East Sea".

Scientific advice: PICES is not designed to provide short-term, tactical, management advice, in contrast to our sister organisation ICES. However, PICES is moving to provide advice on broad issues concerning North Pacific marine systems, whether specifically requested by member nations or not. The North Pacific Ecosystem Status Report is one example of unsolicited advice. In October 2003, PICES received a formal request for advice from the United States concerning the characteristics and impacts of recent regime-like changes in the North Pacific. PICES responded by forming a 1-year Study Group (called FERRRS: *Fisheries and Ecosystem Responses to Recent Regime Shifts in the North Pacific*). The report of this Study Group was presented to the United States delegates at PICES XIII. A brief description of the findings of this group is presented elsewhere in this Newsletter; the full report and a glossy brochure with short answers to the questions posed by the United States are available on the PICES web site or from the PICES Secretariat.

Scientific capacity: Scientific capacity within PICES includes the willingness and commitment of the scientists and others about the North Pacific (and elsewhere) to devote time and effort to the work of PICES. It also includes a strong PICES Secretariat which, with only 4 permanent staff, is doing an outstanding job of keeping these activities going. To help a broad-based, scientific, organisation like PICES formulate a clear direction and maintain a sense of forward momentum, the Governing Council, Science Board, and scientists of PICES developed a PICES Strategic Plan (http://www.pices.int/about/PICES_strategy.pdf). The PICES mission is "To promote and coordinate marine scientific research in the North Pacific Ocean in order to advance scientific knowledge of

the area concerned and of its living resources.” This Plan includes a strategy for PICES to achieve this mission, involving 5 themes each with specific goals:

- Theme A. Advancing scientific knowledge
- Theme B. Applying scientific knowledge
- Theme C. Fostering partnerships
- Theme D. Ensuring a modern organization supporting PICES activities
- Theme E. Distributing PICES scientific information.

The Strategic Plan was developed to guide the selection of future activities of PICES. Over the past years there has been much enthusiasm for the meetings and work done by PICES, but also a sense that continuity is lacking, that issues raised as important one year, for example, to form a working group on a particular topic, are not considered the next year. Following this Strategic Plan, the next steps are to develop an Action Plan, in which each PICES Committee considers where they want to go over the next 3-5 years, what topics they want to explore, and how these fit together with topics of other Committees.

PICES has also re-organized the Climate Change and Carrying Capacity (CCCC) Program. The Basin Scale (BASS) and Regional Experiment (REX) Task Teams were concluded at this Annual Meeting, and PICES thanks their Chairmen and members for their effort and dedication. They have been replaced with a new Task Team on *Climate Forcing and Marine Ecosystem Response* (CFAME), whose objective is to synthesize regional and basin-wide studies and provide a forum for the integration and conclusion of CCCC-related hypotheses and data. The MONITOR Task Team was removed from the CCCC Program and re-formed as a Technical Committee directly under Science Board. This will provide an on-going focus on monitoring in the North Pacific, and in particular will consider the monitoring needs of the PICES region, oversee updates to the North Pacific Ecosystem Status Report, and serve as the interface between PICES and observing systems such as GOOS.

New groups that were formed at PICES XII in October 2003, and which began active work over the past year include the *Harmful Algal Bloom Section* under MEQ, Working Group 18 on *Mariculture in the 21st century - The intersection between ecology, socio-economics and production*, and the Study Group on *Ecosystem-based management science and its application to the North Pacific*. Two new groups were formed at PICES XIII in October 2004, one a Working Group (for a 3-year duration) on *Ecosystem-based management science and its application to the North Pacific* (which replaces the 1-year Study Group), and the other an Advisory Panel under the Physical Oceanography and Climate Committee on the CREAMS/PICES Program in East Asian Marginal Seas. Working Group 14 on *Effective sampling of micronekton* presented its final report at PICES XIII, which will be

published shortly in the PICES Scientific Report Series. Working Group 16 on *Climate change, shifts in fish production, and fisheries management* submitted a near-final draft at this Annual Meeting and is expected to be completed by spring 2005. Working Group 17 on *Biogeochemical data integration and synthesis* is expected to publish soon their “Guide of best practices for oceanic CO₂ measurements and data reporting.”

Up-coming highlights for 2005

The theme of the PICES Fourteenth Annual Meeting in Vladivostok, Russia, September 30 - October 8, 2005, will be “Mechanisms of climate and human impacts on ecosystems in marginal seas and shelf regions”. Other symposia in various stages of planning (see the PICES web site for details) include:

- *Climate variability and sub-Arctic marine ecosystems*, May 16-20, 2005, in Victoria, Canada (co-sponsored with GLOBEC);
- *State of Pacific salmon and their role as indicators of the health of North Pacific ecosystems*, October 30 - November 2005, in Jeju, Korea (jointly with NPAFC);
- *Marine bioinvasions*, spring 2006 (jointly with ICES);
- *Climate variability and ecosystem impacts on the North Pacific: a basin-scale synthesis*, a PICES CCCC Symposium, April 19-21, 2006, in Honolulu, Hawaii;
- *4th Zooplankton Production Symposium*, May 28 - June 1, 2007, in Hiroshima, Japan (jointly with GLOBEC and ICES);
- *Young Scientists Conference* proposed for 2007 (jointly with ICES).

In addition, PICES is discussing what scientific issues should be the basis for the next major integrating program of PICES, after the completion of the CCCC Program. Suggestions so far include additional questions arising from the CCCC Program, possible interactions with CLIVAR on climate and North Pacific ecosystems, issues of marine biogeochemistry and food webs that would link with the new IGBP program on *Integrated Marine Biogeochemistry and Ecosystems Research* (IMBER), and ocean and ecosystem responses to high concentrations of carbon dioxide. Other ideas are welcome.

Finally, as this is the end of my 3-year term as Chairman of PICES Science Board, I welcome Dr. Kuh Kim (Korea) as the new Chairman of Science Board, and express my thanks to the Governing Council, the scientists, and in particular to the PICES Secretariat for their help and support during my term. Your support has been essential – Thank You!

*R. Ian Perry
PICES Science Board Chairman
Fisheries & Oceans Canada
Pacific Biological Station,
Nanaimo, B.C., Canada V9T 6N7
E-mail: perryi@pac.dfo-mpo.gc.ca*