

# S1 Science Board Symposium

## Understanding ecosystem dynamics and pursuing ecosystem approaches to management

*Co-Convenors: John E. Stein (SB), Michael J. Dagg (BIO), Mikhail Stepanenko (FIS), Glen Jamieson (MEQ), Hiroya Sugisaki (MONITOR), Michael G. Foreman (POC), Bernard A. Megrey (TCODE), Harold P. Batchelder (CCCC), Michio J. Kishi (CCCC), Fangli Qiao (China) and Sinjae Yoo (Korea)*

PICES undertakes a new science program, FUTURE (Forecasting and Understanding Trends, Uncertainty and Responses of North Pacific Marine Ecosystems), to understand the responses of marine ecosystems in the North Pacific to climate change and human activities, having the major questions: 1) How does ecosystem structure and function determine an ecosystem's response to natural and anthropogenic forcing? 2) How do physical and chemical processes respond to natural and anthropogenic forcing and how are ecosystems likely to respond to these changes in abiotic processes? 3) How do human activities impact coastal marine ecosystems and their interactions with offshore and terrestrial systems. We have only a limited ability to forecast how marine ecosystems will be affected by the changing global climate. Consequently, we still have limited knowledge on the assessment and management of marine ecosystems. Under this situation, it is necessary to improve our understanding of ecosystem structure and function, ecosystem stability and resilience, and to understand and quantify the impacts of human activities and climate on marine ecosystems. It is urgent that we develop and adopt a comprehensive ecosystem-based approach which will be required to manage depleted and deteriorated marine ecosystems. To this end, breakthroughs have to be made in many areas, including evaluation of ecosystem status.

### Monday, October 26 (11:00-17:45)

- 10:00 **Chang Ik Zhang (Keynote)**  
Ecosystem-based fisheries assessment and management: A step towards FUTURE implementation of ecosystem approaches to management
- 10:40 **Coffee / tea break**
- 11:00 **John K. Pinnegar, Steven Mackinson, Kathryn Keeble and Georg H. Engelhard (Invited)**  
How does ecosystem structure and function determine the response to natural and anthropogenic forcing? (S1-5817)
- 11:25 **Suam Kim, Ana L. Rosa, Sang-Wook Yeh, Chung I. Lee, Sukyung Kang, Sinjae Yoo, Hyunwoo Kang and Yasunori Sakurai (Invited)**  
Effects of atmospheric and oceanographic variability on the common squid (*Todarodes pacificus*) in Korean and Japanese waters during the last 30 years (S1-5811)
- 11:50 **William Crawford and James Irvine**  
A group approach to understanding ecosystem dynamics in the northeast Pacific (S1-5887)
- 12:10 **William J. Sydeman, Jarrod A. Santora, Stephen Ralston, Nandita Sarkar, Steven J. Bograd, and Robert M. Suryan**  
Krill of the California Current: Predictive habitat modeling for ecosystem protection? (S1-5800)
- 12:30 **Lunch**
- 14:00 **Mitsutaku Makingo, Chikako Watanabe, Masahito Hirota and Takumi Mitani (Invited)**  
Understanding the interactions between ecosystem structure and fisheries structure: The case of the sardine, anchovy, chub mackerel, and purse seine fisheries in Japan (S1-5986)

- 14:25 **Franz J. Mueter and Michael A. Litzow (Invited)**  
The spatial footprint of biological re-organization in a demersal community (S1-5761)
- 14:50 **Hiroshige Tanaka, Seiji Ohshimo and Yoshiaki Hiyama**  
Long-term fluctuations in the biomass of sardine *Sardinops melanostictus* in the western Japanese waters (Sea of Japan and East China Sea) from 1953 to 2008, in relation to climate variability (S1-5855)
- 15:10 **Chang Ik Zhang, Jennifer Boldt, Angie Greig, Anne B. Hollowed and Patricia Livingston**  
An assessment of fisheries management strategies in Alaska relative to the goals of ecosystem approaches to management (S1-5830)
- 15:30 ***Coffee / tea break***
- 15:50 **Michael Sinclair (Invited)**  
Ecosystem approach to management: The Scotian Shelf example (S1-5778)
- 16:15 **Erlend Moksness (Invited)**  
Major human activities affecting Norwegian coastal marine ecosystems: Present status and challenges (S1-5578)
- 16:40 **Tony Smith, Beth Fulton and David Smith (Invited)**  
Ecosystem approaches to managing marine systems – the human dimension (S1-5975)
- 17:05 **Wei Zheng, Zongling Wang and Mingyuan Zhu**  
Impact of human activities on marine ecosystem services (S1-5618)
- 17:25 **Peter S. Ross**  
The pulse of the Pacific: Can science respond effectively to a changing ocean? (S1-5721)
- 17:45 ***Session ends***

**S1 Posters**

- S1-5536 **Lidia T. Kovekovdova and Mikhail V. Simokon**  
Environmental assessment of the rivers of Peter the Great Bay basin (Japan/East Sea)
- S1-5537 **Mayuko Tomida, Nobuyuki Miyazaki and Masahide Kaeriyama**  
Biotransport of POPs by salmonids in the North Pacific
- S1-5558 **Olga N. Lukyanova, Andrey P. Chernyaev, Nikolay V. Kolpakov and Anna S. Vazhova**  
Environmental impact assessment in the estuarine ecosystems of Peter the Great Bay (Japan/East Sea)
- S1-5603 **Sanae Chiba, Kazuaki Tadokoro, Akira Kuwata and Hiroya Sugisaki**  
Bottom-up control of multi-decadal variation of the western North Pacific ecosystem revealed by stable isotope ratio analysis
- S1-5627 **Shan Gao, Hui Wang, Guimei Liu and Liyin Wan**  
Temporal and spatial distribution of marine primary production in the South China Sea (SCS)
- S1-5633 **Hai Li, Jing Yang and Qin-Zheng Liu**  
Numerical simulation study on primary production in the Bohai Sea in summer, 2006
- S1-5638 **Hui Wang, Guimei Liu, Shan Gao and Hua Jiang**  
Response of marine primary production to monsoon variations in the South China Sea
- S1-5753 **Hyunju Seo, Hideaki Kudo and Masahide Kaeriyama**  
Causal linkage among growth, survival, and intra-population interactions of Hokkaido chum salmon related to climate changes in 1945-2005
- S1-5789 **Vladimir Krapivin and Ferdenant Mkrtchyan**  
An adaptive technology for Nature/Society System biocomplexity assessments
- S1-5831 **An-Yi Tsai, Kuo-Ping Chiang, Ciou-Jyu Wang and Gwo-Ching Gong**  
The impact of the Changjiang River plume extension on the nanoflagellate community in the East China Sea
- S1-5880 **Felipe Hurtado-Ferro**  
The role of uncertainty in hypothetical top predator culling programs
- S1-5902 **Pavel A. Salyuk, Oleg A. Bukin, Alexander Yu. Mayor, Andrey N. Pavlov and Konstantin A. Shmirko**  
Atmosphere aerosol and marine ecosystems after Sarychev Peak volcano eruption of June 2009
- S1-5935 **Joong Ki Choi, Jae Hoon Noh, Sung Hwan Cho, Seung Yoon Park and Youngju Lee**  
Long term change of phytoplankton ecology in the eastern part of the Yellow Sea
- S1-5946 **Seok-Hyun Youn, Yu-Mi Jun, Jae-Dong Hwang, Yong-Hwa Lee, Hyun-Gook Jin, Jung-Min Shim, Young-Suk Kim and Ki-Young Kwon**  
Egg production of copepod *Acartia omorii* in the coastal waters of Korea
- S1-5948 **Young-Sang Suh, Ki-Tack Seong, Jae-Dong Hwang, and Yeong Gong**  
Mixed layer depth in the high production region off Korea
- S1-5965 **Jae Bong Lee, Dong Woo Lee, Yeong Min Choi, Chang Ik Zhang, Myoung Ho Sohn, Sung Il Lee, Young Il Seo, Sang Chul Yoon, Yoo Jung Kwon, Jong Hee Lee, Hee Won Park, Young Jae Shin, Do Hoon Kim, In-Ja Yeon, Heui Chun An and Dae Soo Chang**  
A comparative study on the ecosystem risk indices of Korean waters

