

## **APPENDIX C: BASS WORKSHOP ON THE DEVELOPMENT OF A CONCEPTUAL MODEL OF THE SUBARCTIC PACIFIC BASIN ECOSYSTEMS**

At the PICES Sixth Annual Meeting, the BASS Task Team sponsored a symposium on the ecosystem dynamics of the Eastern and Western Subarctic Gyres. The purpose was to bring together available information on the two gyres in a comparative framework. Topics included: 1) ocean responses to climate forcing, 2) nutrients and primary production, 3) structure of the lower trophic levels, the mesozooplankton communities, and the epipelagic nekton, 4) the role of midwater fishes, and 5) the importance of these areas to marine birds and mammals. Papers presented at the meeting were published in 1999, in a special issue of *Progress in Oceanography* (Vol. 43, No. 2-4) entitled *Ecosystem Dynamics in the Eastern and Western Gyres of the Subarctic Pacific* (Guest Editors: R.J. Beamish, S. Kim, M. Terazaki and W.S. Wooster). The following "key" research problems were pointed out during discussion at the symposium: 1) the need for information on short-term or seasonal changes in the mixed layer, 2) how climate-variation may be changing the stability of the water column, 3) the role of iron: understanding transport mechanisms, 4) community dynamics and the need for small scale diet studies, and 5) biomass estimates of some "key" species.

Members of the BASS Task Team felt that the next step should be to develop a conceptual model of the subarctic Pacific basin ecosystems and begin to examine appropriate models. A 2-day BASS Workshop on this topic was convened prior to the PICES Ninth Annual Meeting in Hakodate, Japan (October 20-21, 2000). The objective of this workshop was to identify appropriate approaches, not only modelling approaches but also how to develop studies which will answer some of the questions.

At the workshop, a number of presentations were made on ecosystem models that participants had used (see Endnote C1 for attendance). These models were reviewed and discussed with respect

to their utility for gyre systems. Trophodynamic linkages that were likely to be common, as well as those that were model-specific, were identified, and shortfalls were highlighted. Discussions included identifying data groups and potential data sources, incorporating climate and oceanographic changes in models, and linking gyre models to coastal area models. Extended abstracts of papers given at the workshop are published in PICES Scientific Report No. 17, 2001.

As the PICES CCCC Program enters its synthesis phase, modelling will play a more prominent role in CCCC activity. Participants recommended the BASS and MODEL Task Teams to convene a joint workshop to examine the feasibility of using the ECOPATH/ECOSYSTEM modelling approach as a means to organize our understanding of the marine ecosystems of the subarctic gyres. Specific objectives are to:

- synthesize all trophic level data in a common format;
- examine trophic relations in both gyres using ECOPATH/ECOSIM/ECOSPAC; and
- examine methods of incorporating the PICES NEMURO lower trophic level model into the analysis.

Participants recommended that collaboration and synthesis of the data into a common format take place prior to the workshop. Gordon McFarlane would co-ordinate this issue for North America and Andrei Krovnin and Akihiko Yatsu for Asia. Kerim Aydin will synthesize the data into the ECOPATH format. If possible, the workshop should be held in conjunction with the PICES Census of Marine Life Workshop to be convened March 7-9, 2001, in Honolulu. Locating the venue in Hawaii at this time is seen as a cost-effective way to involve workshop participants from both sides of the Pacific and would lead to a more balanced scientific representation from the nations of the North Pacific.

## Endnote C1

## Participation List

### Canada

Gordon A. McFarlane (convenor)  
Richard J. Beamish (convenor)  
Jacquelynn R. King  
James Irvine  
Steven J.D. Martell

### China

Ling Tong

### Japan

Akihiko Yatsu (convenor)  
Masahide Kaeriyama  
Yukimasa Ishida  
Takashige Sugimoto

### Russia

Andrei S. Krovnin (convenor)  
Victor Tsiger

### U.S.A.

Jeffrey J. Polovina  
Kerim Y. Aydin  
Albert J. Hermann  
Dale B. Haidvogel