REPORT OF BASS TASK TEAM

The Basin Scale Studies (BASS) Task Team met in the morning of October 12, 2003, to review the past year's activities and plan activities for 2004. The Co-Chairmen, Drs. Gordon A. McFarlane and Akihiko Yatsu, welcomed participants (*BASS Endnote 1*) and outlined the objectives of the meeting. The agenda was approved as presented (*BASS Endnote 2*).

Activities and accomplishments in 2003 (Agenda Item 2)

BASS/MODEL Scientific Report

The results from the BASS/MODEL workshop series were published as PICES Scientific Report No. 25. This is the major product of the successful east-west comparison of ecosystem structure and responses to turbulences such as climate variations, primary production variations and removals of key elements (fishery) using ECOPATH and ECOSIM.

2003 BASS Workshop at PICES XII

A 1-day BASS Workshop on "Linkages between open and coastal systems" was convened on October 15, 2003, in Seoul, Korea, during the PICES Twelfth Annual Meeting. A total of 15 talks and 5 posters covering all trophic levels from both gyres and coastal areas were presented. Invited speakers from North America and Asia provided current information on physics, plankton, fish, birds and mammals, and speculated on mechanisms for energy transfer between areas. This information will be useful for future modeling. The summary of the workshop is included elsewhere in this Annual Report. It is expected that selected papers from the workshop will be published in a special issue of *Deep-Sea Research II*.

Report of IFEP Advisory Panel

The report of past and future activities of the Advisory Panel on *Iron Fertilization Experiment* (IFEP) was presented by Dr. Paul J. Harrison (*BASS Endnote 3)*. Discussions centered on:

- east-west differences in primary production variability;
- the relative importance of three iron supply sources - dust/fog, upwelling and transport from coastal areas;
- the possibility of input of iron supply from dust/fog into numerical modeling (this was thought too complicated to input at this stage).

Proposed activities at PICES XIII (Agenda Item 3a) and NEXT report (Agenda Item 4)

With the successful completion of the gyre modeling work, participants discussed linking open ocean and coastal ecosystems from the viewpoint of CCCC synthesis, including focusing on key species, examining modeling approaches and re-structuring CCCC Task Teams. The discussion resulted in:

- a proposal of a 2-day BASS/REX/MODEL Workshop at PICES XIII entitled "Linking open ocean and coastal systems II" (*BASS Endnote 4*); and
- a recommendation of the unification of BASS and REX as one new Task Team (*BASS Endnote 5*).

The proposed workshop will further examine the oceanographic and biological linkages between open ocean and coastal systems in the North Pacific Ocean for the subsequent ecosystem modeling, and should provide a new center of focus for the proposed merged Task Team.

Joint NPAFC/PICES symposium (Agenda Item 3b)

A 2-day joint BASS/NPAFC workshop on the role of salmon and associated species in linking open ocean and coastal systems was originally proposed for immediately prior to PICES XIII (Honolulu, U.S.A.). The new suggestion, developed by the Chairmen of the NPAFC CSRS and PICES Science Board, is to postpone

this workshop, and instead hold a major joint-symposium in 2005, with the working title "State of Pacific salmon and their role as indicators of the health of North Pacific ecosystems". Development of the symposium (if approved) objectives and key questions to be addressed will take place in early 2004, and the final organization will occur at NPAFC and PICES' Annual Meetings in 2004. BASS supported this proposal and recommended Drs. Richard J. Beamish (Canada) and Yukimasa Ishida (Japan) as PICES' convenors.

North Pacific Ecosystem Status Report (Agenda Item 5)

BASS endorsed the progress of NPESR preparation. BASS will examine the draft report to ensure that information on the gyres is reflected. In addition, BASS members suggested the need of addressing some omissions (*e.g.*, 1989 regime shift) and standardizing terminology (*i.e.*, 3 types of regimes?). BASS members will address these specific concerns and provide comments to the NPESR Working Group.

Reports on PICES capacity building and Strategic Plan (Agenda Items 6 and 7)

BASS endorsed the approach presented for capacity building and the PICES Strategic Plan (Vision Statement), particularly that of advising on the sustainability of living marine resources and protection of the marine environment.

Requests for travel (Agenda Item 8)

BASS requests support for 2 scientists to attend the Workshop on "Linking open ocean and coastal ecosystems II" at PICES XIII.

Election of Co-Chairman (Agenda Item 10)

BASS requests to replace Dr. McFarlane (Canada) by Dr. Kerim Aydin (U.S.A.) as the BASS Co-Chairman. It was noted that Dr. Aydin has not yet been nominated by the United States as a member of BASS even though he has actively participated in BASS activities during the last four years. The nomination is pending CCCC and Science Board approval of the BASS/REX unification into a new Task Team.

BASS Endnote 1

Participation List

Members

Masahide Kaeriyama (Japan)
Suam Kim (Korea)
Andrei S. Krovnin (Russia)
Gordon A. McFarlane (Canada, Co-Chairman)
Vadim F. Savinykh (Russia)
Akihiko Yatsu (Japan, Co-Chairman)

Observers

Kerim Y. Aydin (U.S.A.)
Richard J. Beamish (Canada)
Michael J. Dagg (U.S.A.)
Paul J. Harrison (Canada)
Yukimasa Ishida (Japan)
Makoto Kashiwai (Japan)
Jacquelynne R. King (Canada)

BASS Endnote 2

BASS Meeting Agenda

1. Welcome and introductions
2. Review accomplishments in 2003
   a. BASS/MODEL Scientific Report No. 25
   b. BASS Workshop on "Linkages between open and coastal systems" at PICES XII
   c. Report of *IFEP* Advisory Panel
3. Planning for 2004
   a. Workshop "Linking open ocean and coastal system II" at PICES XIII (follow-up from 2003 BASS Workshop)
   b. Joint symposium with NPAFC

c. Discuss role of BASS in proposed CCCC inter-sessional symposium
4. Discussion of report from NEMURO EXperimental Planning Team (NEXT)
5. Discussion of North Pacific Ecosystem Status Report
6. Discussion of report from Study Group on *PICES Capacity Building*
7. Discussion of report from Study Group on *PICES Strategic Issues*
8. Specific funding requests for 2004 and 2005
9. Other business
10. Election of new BASS Co-Chairman

BASS Endnote 3

Report of *Iron Fertilization Experiment* Advisory Panel

Activities in 2003

SERIES Workshop

A 4-day SERIES (**S**ubarctic **E**cosystem **R**esponse to **I**ron **E**nrichment **S**tudy) Workshop was held March 9-12, 2003, at the Institute of Ocean Sciences, Sidney, Canada. Observed results from the experiment conducted in July-August 2002, in the Eastern Subarctic Pacific by three research vessels, CSS *John P. Tully* (Canada), M/V *El Puma* (Mexico) and M/V *Kayio-Maru* (Japan) were synthesized. Data exchange, publications, timeline for the next 12 months, etc. were discussed.

SEEDS planning meeting

A planning meeting for the 2004 SEEDS (**S**ubarctic Pacific Iron **E**xperiment for **E**cosystem **D**ynamics **S**tudy) experiment in the Western Subarctic Pacific was held April 18, 2003, at the Ocean Research Institute, University of Tokyo, Japan. Objectives of the research projects were presented by both US and Japanese scientists. The ship schedule for US and Japanese research vessels and parameters that will be measured on each vessel were discussed.

Activities in 2004

PICES IFEP Workshop

A 3-day PICES IFEP Workshop on "*In situ* iron enrichment experiments in the Eastern and Western Subarctic Pacific" will be held February 11-13, 2004, at the Institute of Ocean Sciences in Sidney, British Columbia, Canada. (The schedule was changed from December 2003 to February 2004.)

Specific objectives of the workshop are:

- to synthesize results from two recent *in situ* iron enrichment experiments in the Subarctic Pacific (SEEDS-2001 and SERIES-2002);
- to discuss responses in lower and higher trophic levels, carbon cycles, trace-gas production and ocean-atmosphere flux, and models;
- to determine similarity and differences in biogeochemical and ecosystem responses to iron addition between Eastern and Western Subarctic Pacific; and
- to identify specific scientific questions for the longer-term experiment in the Western Subarctic Pacific (SEEDS-2004).

The results of this IFEP workshop will be published as a PICES Scientific Report in 2004.

Travel support from PICES is requested (and approved in 2003) for one scientist from New Zealand to attend the workshop.

Topic Session at ASLO/TOS Conference

A 1.5-day special session on "Response of the upper ocean to mesoscale iron enrichment" will be convened February 17-18, 2004, at the ASLO/TOS Ocean Research Conference in Honolulu, U.S.A. The Session represents a combined effort of the Canadian SOLAS and the PICES IFEP.

SEEDS-2004

The second *in situ* iron enrichment experiment in the Western Subarctic Pacific (SEEDS-2004) will take place in July-August 2004. A Japanese ship will release iron on July 17, 2004, stay at

the iron-enriched patch for 10 days, and come back to the site from Day 23 to Day 34. A US research vessel will be at the site from Day 6 to Day 26, which allows us 4-5 days' overlapping at the beginning and the end of the experiment.

Publications

Selected papers from the SEEDS-2002 experiment as well as the experimental design of SEEDS-2004 will be published as a special issue of *Progress in Oceanography*.

BASS Endnote 4

Proposal for a 2-day BASS/REX/MODEL Workshop at PICES XIII on "Linking open ocean and coastal ecosystems II"

Following the successful completion of the BASS/MODEL workshop series on data synthesis and trophic modeling of the subarctic Pacific basin ecosystems (PICES Scientific Report No. 25), and a 1-day BASS Workshop on "Linkages between open and coastal systems" at the 2003 PICES Annual Meeting and the MODEL/REX workshops to develop NEMURO.FISH, we propose a 2-day BASS/MODEL/REX workshop prior to PICES XIII, in order to explore specific food web modeling approaches for linking climate with coastal and oceanic biological production, as a recommended continuation of these Pacific-wide collaborative research efforts. Specifically, climate events may propagate through trophic levels with variable effects at each level, such that coherent patterns that exist may not be detectable across all regions without further modeling synthesis. To date, models of lower trophic levels (NEMURO), forage species (NEMURO.FISH) and upper trophic levels (ECOPATH/ECOSIM) have been constructed of multiple regions of the North Pacific to examine coastal and oceanic regions with a common set of modeling tools. The next step is to compare and evaluate these and complementary methods (such as Individual Based Models) in a Pacific-wide synthesis.

The workshop shall consist of three components:

1. A critical evaluation of regional and basin-wide trophic models with a focus on the recent results of BASS, MODEL and REX Task Teams. The development of complementary and comparable approaches to *(a)* modeling connections between climate and ecosystems, lower and upper trophic levels, and coastal and oceanic regions; and *(b)* incorporating seasonal dynamics. Discussion shall include the identification of key data requirements for North Pacific scale production modeling and forecasts.

2. As a specific example, the examination of climate driven processes underlying changes in the distribution (expansion and contraction) of Pacific sardines, especially with respect to transitions between coastal and oceanic (gyre) ecosystems. What are the future expectations of sardine productivity and distribution under various climate change scenarios?

3. Synthesis of PICES activities to date that are applicable to BASS/REX studies, particularly Pacific-wide climate influence on ecosystems and marine resource productivity. Identification of the major issues and gaps in knowledge relating to the understanding of changes in ecosystems under a changing environment. Recommend solutions, particularly identifying fieldwork required to fill in the gaps in knowledge and to improve predictive ability.

Recommended conveners: Gordon A. McFarlane (Canada), Akihiko Yatsu (Japan), Kerim Aydin (U.S.A). REX and MODEL are to be approached to co-sponsor the workshop and nominate convenors.

Travel support is requested for two scientists to attend the workshop.

BASS Endnote 5

Rationale for integrating the BASS and REX Task Teams

The BASS Task Team requests that the CCCC-IP Executive Committee consider combining the BASS and REX Task Teams into one new Task Team, and identifying new Co-Chairmen. We believe that this will ensure fuller participation from all member countries, and ensure coverage of both open ocean and coastal regions appropriately. The following rationale was discussed and agreed upon by participants:

1. It is consistent with recent activities of each of these two Task Teams that have examined linkages between coastal and open ocean systems.
2. The original intent of PICES was to have a single Task Team, but these two Task Teams were created so that baseline studies could be undertaken. After 12 meetings, many of these baseline activities have been completed.
3. An integrated Task Team could provide the scientific body for hypothesis testing of model experiments as recommended by NEXT in their Strategy for accomplishing PICES CCCC Program synthesis.
4. MODEL Task Team has been collaborating separately with each of BASS and REX. An integrated Task Team would be a more effective approach for collaborating with MODEL.
5. One Task Team will also ensure better participation and a clearer focus for examining climate change impacts on ecosystems. This will be advantageous for fiscal efficiency.