

REPORT OF BIOLOGICAL OCEANOGRAPHY COMMITTEE



The meeting of the Biological Oceanography Committee was held from 1330-1730 hours on October 10, 2001. The Chairman, Dr. Tsutomu Ikeda, called the meeting to order and welcomed new members Dr. Michio Kishi (replacing Prof. Takashige Sugimoto), Dr. Michael Dagg (replacing Prof. Michael M. Mullin), Dr. Richard D. Brodeur (replacing Dr. Linda Jones), Dr. Angelica Peña (replacing Dr. Kenneth L. Denman) (see *BIO Endnote 1* for attendance). The Committee reviewed the agenda and it was adopted as presented (*BIO Endnote 2*).

Business arising from last year's meeting (Agenda Item 3)

- a. Dr. Ikeda briefly informed the Committee on the process by which Prof. Michael M. Mullin was selected to be the first recipient of the Wooster Award.
- b. Additional members were added to WG 14 on Effective Sampling of Micronekton: Drs. Kouichi Kawaguchi (Japan), Michael Seki (U.S.A.), Orio Yamamura (Japan) and Won Duk Yoon (Korea). Dr. Yamamura will serve as Co-Chairman of the Working Group (see Agenda item 5 for details).
- c. The Publication Committee was disbanded because it had been inactive. It was thought to be important, however, and would be considered for revival within the next two years.
- d. BIO discussed the proposal on documenting PICES science (*SB Endnote 11*). Session conveners were requested to leave some time and to stimulate a discussion at the end of each session, to assure some synthesis of the session content occurred and was reported.

Election of BIO Chairman (Agenda Item 4)

This item actually was skipped until after Agenda Item 5 was completed, at which time Dr. Ikeda reviewed the PICES rules for election of the Committee Chairman. Drs. Vladimir I.

Radchenko (Russia), David L. Mackas and Paul J. Harrison (Canada) were nominated. Dr. Mackas declined because of time constraints – he is Co-Chairman of the MONITOR Task Team. Dr. Harrison withdrew because of his pending move to Hong Kong. Dr. Radchenko was elected as the new BIO Chairman with the term of his appointment to begin immediately after the close of this year's PICES Annual Meeting. The Committee thanked Dr. Ikeda for his leadership and valuable contribution to BIO activities over the years.

Progress report of Working Group 14 on Effective Sampling of Micronekton (Agenda Item 5)

The Co-Chairman of WG 14, Dr. Brodeur, gave a presentation summarizing the activities of the Working Group (*BIO Endnote 3*). He described the terms of reference for WG 14, and presented an overview of the meeting held on October 7, 2001. He then presented an outline of the report that would be written, indicating that it would be a large report because many aspects of micronekton sampling were being addressed.

The Working Group proposed to hold an inter-session meeting at the AGU/ASLO Ocean Sciences Meeting in Hawaii, in February 2002. The Committee noted that a formal request to the Science Board should be placed right away if this inter-session meeting was to be held. The target date for completion of the WG report is 2003. There was also discussion of a PICES-supported cruise to compare different micronekton sampling devices.

Dr. Brodeur proposed a joint session for the next PICES meeting tentatively titled "*Importance of shallow topography (shelf and seamounts) in concentrating micronekton and facilitating transfer to higher trophic levels*". Later, the Committee learned that the POC had approved this topic as a joint BIO/POC session, although

they requested a slight modification to the title to broaden the topic to include zooplankton. The revised title and abstract appears in *BIO Endnote 4*. FIS also discussed supporting this topic jointly, and this was approved.

Report of the Advisory Panel on *Marine Birds and Mammals* (Agenda Item 6)

The Panel Co-Chairman, Dr. Hidehiro Kato, distributed a written report to BIO members (*BIO Endnote 5*), and an overview of this handout was presented by Co-Chairman, Dr. Douglas F. Bertram. Dr. Bertram first summarized the terms of reference for the Advisory Panel on *Marine Birds and Mammals* (*MBMAP Endnote 2*), and then reviewed the recommendations on workshops and topic sessions that were discussed and agreed upon by the Panel at the meeting held on October 7, 2001 (*MBMAP Endnotes 4 and 5*). It was especially stressed that MBMAP term of reference #2, stated that member nations should be encouraged to catalogue their data on birds and mammals so it could be available to the scientific community. MBMAP advised that this should be given highest priority, and asked BIO to pass this concern to the Science Board.

It was noted that the names of the MBMAP members that would be attending the various Task Team (BASS, MONITOR, etc.) meetings be provided to the Chairmen of those groups so that MBMAP could be included in all appropriate communications.

ICES/PICES/GLOBEC Comparative Zooplankton Ecology Symposium (Agenda Item 7)

Dr. Ikeda reported that the joint Comparative Zooplankton Ecology Symposium, which PICES proposed at the ICES/PICES Zooplankton Ecology Workshop (Hawaii, March 2000), was approved by ICES and GLOBEC, and was now scheduled to be held at the Congress Center, in Gijón, Spain, during the period of May 20-23, 2003 (*BIO Endnote 6*). Drs. William T. Peterson and Tsutomu Ikeda are representing PICES in the Organizing Committee, and Dr. Ikeda is also a Co-

Convenor. The main goal of the symposium is to define the 'state of the art' of zooplankton ecology and to determine key research initiatives to be pursued in the 21st century. The sponsorship of the meeting reflects the global nature and global importance of the role of zooplankton in food chain dynamics and in biochemical cycles. The first announcement of the Symposium was widely distributed in October 2001, and is available on the websites of all the sponsoring organizations.

Review of BIO Strategic Plan (Agenda item 8)

The Chairman circulated an outline of goals for the BIO Strategic Plan and current activities toward these goals:

1. *Improve cooperation with other PICES components:* BIO accomplished this by sponsoring joint topic sessions with CCCC, POC, MBM Advisory Panel at PICES IX, and with POC, FIS and MEQ at PICES X.

2. *Enhance interaction with relevant international organizations:* BIO is organizing a joint ICES/PICES/GLOBEC Symposium on Comparative Zooplankton Ecology in May 2003 (see Agenda Item 7 above).

3. *Increase involvement in specific recognized scientific issues:* BIO participated in a recent workshop on *Designing the iron fertilization experiment in the Subarctic Pacific*, held in October 2000, in Tsukuba, Japan, and in its field experiments in 2001.

4. *Improve attendance and participation in PICES Committees, Task Teams and Working Groups:* This remains a problem area. This item elicited some discussion from the Committee, and it was recommended that this problem be brought again before the Science Board for discussion at that level.

5. *Improve inter-sessional work via e-mail leading to shorter and more efficient Annual Meetings:* This has only been partly successful. More e-mail does not necessarily lead to shorter meetings.

6. *Increase travel support for student participation at Annual Meetings*: PICES is providing partial support for some students and young scientists, but BIO was unable to document extent or details. This item was discussed at some length and several suggestions were put forward, including:

- PICES must make sure that the conveners of sessions can identify student abstracts;
- a competition for “best student paper” be held in association with BIO sessions, and the selected student be funded to attend the meeting and present his/her paper; and
- the conveners of BIO sessions should include at least 2 young investigators for oral presentations.

No clear action was taken on these issues.

An additional activity for the BIO Strategic Plan was suggested, that, essentially, BIO should develop a list of scientific topics or themes that could be considered by the community for future BIO sessions. BIO should also try to provide more scientific direction and vision to the community. At the end of the meeting, Dr. George L. Hunt also made a specific suggestion, which was an extension of his recent work on ecosystem controls in the southeastern Bering Sea (this work was presented in the CCCC Topic Session at PICES X). The Committee generally seemed to agree that the additional goal of providing scientific topics or themes of relevance to BIO should be incorporated into the Strategic Plan.

Proposals for the Topic Sessions at PICES XI (Agenda item 9)

Several topics were listed as potential themes for Topic Sessions at PICES XI:

1. Influence of climatic and pollution on ecosystem dynamics on marginal seas
2. Responses of marine organisms to iron input in the North Pacific
3. Modeling of fish recruitment, especially pelagic fish

Topic 1 was considered not sufficiently relevant to be presented next year. Topic 2 was

considered to be too early because the analyses from the field work would not be done in time to allow fully developed papers to be prepared. Topic 3 was not considered a BIO theme. Additional topics were proposed and discussed. It was concluded that the following three requests would be sent forward to the Science Board:

1. A full-day BIO Topic Session on *Food-web dynamics in marginal seas – natural cycles and human impacts*, proposed by Dr. Paul J. Harrison, who would be a co-convenor of this session (*BIO Endnote 7*);
2. A half-day BIO/FIS Topic Session on *Responses of upper trophic level predators to variability in prey availability: An examination of trophic level linkages* proposed by MBMAP; recommended convenors: Elizabeth A. Logerwell (U.S.A.), Hidehiro Kato (Japan) and Gordon A. McFarlane (Canada);
3. A half-day BIO/POC/FIS Topic Session on *Importance of shallow topography (shelf and seamounts) in concentrating oceanic micronekton and facilitating transfer to higher trophic levels*, proposed by WG 14; recommended convenors: Orio Yamamura (Japan), John F. Dower (Canada) and Richard D. Brodeur (U.S.A.).

2001 BIO Best Presentation Award (Agenda Item 10)

Six young candidates were listed as potential recipients of the award for oral presentation, to be selected immediately after the last day’s BIO Topic Session. Based on the recommendations, BIO voted for Dr. Sanae Chiba (Japan) for her paper (with Dr. Toshiro Saino) entitled “Plankton community study: A better way to understand ecosystem dynamics in the Japan/East Sea”.

Other topics (Agenda Item 11)

Concern was expressed about the overlap of sessions but it was stated that it was difficult to avoid completely.

The proposed theme for PICES XII (*SB Endnote 10*) to be held in October 2003, in Seoul, Korea, was discussed briefly. It was thought that this theme of *Human dimensions of ecosystem variability* should also include impacts of ecosystem changes on humans, and thus it was recommended that an additional sentence be included into the description. The sentence, “*What are the effects of ecosystem change on human societies?*”, will be put forward to the Science Board. Also, BIO recommended that the Science Board consider changing the wording of the title so that it more clearly reflected the intent and extent of the theme.

BIO requests to Science Board

Database development

MBMAP requested that member nations develop a catalogue of marine birds and mammals data (in a metadata format) on time-series of marine birds and mammal vital rates and dietary studies.

BIO Endnote 1

Members:

Richard D. Brodeur (U.S.A.)
Michael Dagg (U.S.A., rapporteurs)
Paul J. Harrison (Canada)
Tsutomu Ikeda (Japan, Chairman)
Woong-Seo Kim (Korea)
Michio Kishi (Japan)
David L. Mackas (Canada)
Angelia Peña (Canada)
Vladimir I. Radchenko (Russia)
Atsushi Tsuda (Japan)
Patricia A. Wheeler (U.S.A.)

Workshops/meetings prior to PICES XI

1. WG 14, one-half day
2. MBMAP, one-half day

Funding for publication

Selected papers from the 2001 BIO Topic Session on *Plankton size classes, functional groups, and ecosystem dynamics: Causes and consequences*, in a special issue of *Progress in Oceanography*.

Travel support requests

1. Two to three scientists to attend the interim meeting of WG 14 on *Effective sampling of micronekton*, to be held in conjunction with the AGU/ASLO Ocean Sciences Meeting (Honolulu, February 2002);
2. One Russian scientist to attend the MBMAP meeting at PICES XI;
3. Three invited speakers for the Topic Sessions at PICES XI (BIO/POC/FIS Topic Session - 1 person and BIO/FIS Topic Session - 2 persons).

Participation List

Others:

Douglas F. Bertram (Canada, MBM)
Edward Black (Canada)
Sung Y. Hong (Korea)
George L. Hunt (U.S.A., MBM)
Hidehiro Kato (Japan, MBM)
Elizabeth A. Logerwell (U.S.A.)
Jeffrey M. Napp (USA)
Chul Park (Korea)
R. Ian Perry (Canada, SB)
Toshiro Saino (Japan, JGOFS)
William Sydeman (U.S.A., MBM)

BIO Endnote 2

BIO Meeting Agenda

1. Welcome and introduction of members
2. Approval/modification of agenda
3. Business arising from last year's meeting
4. Election of BIO Chairman
5. Progress report of WG 14 on *Effective sampling of micronekton*
6. Report of Advisory Panel on *Marine Birds and Mammals*
7. ICES/PICES/GLOBEC Comparative Zooplankton Ecology Symposium
8. Review of BIO Strategic Plan
9. Proposals for the Topic Sessions at the PICES Eleventh Annual Meeting in 2002
10. 2001 BIO Best Presentation Award
11. Other topics
12. Draft report to Science Board

BIO Endnote 3

Progress report of WG 14 on *Effective sampling of micronekton*

The meeting was convened on October 7, 2001, by Co-Chairmen, Drs. Richard D. Brodeur and Orio Yamamura.

Introduction of attendees

Richard D. Brodeur (U.S.A., Co-Chairman)
John F. Dower (Canada)
Tsutomu Ikeda (Japan, observer, BIO Chairman)
Naoki Iguchi (Japan)
Kouichi Kawaguchi (Japan)
Chul Park (Korea)
Yasunori Sakurai (Japan)
Vadim F. Savinykh (Russia)
Michael Seki (U.S.A.)
Orio Yamamura (Japan, Co-Chairman)

Review of terms of reference:

- a. Evaluate sampling gear and problems, propose improvements, and recommend collaborations among PICES countries for gear inter-comparisons;
- b. Obtain and tabulate data on consumption and biomass of micronekton, stratify by region and taxa, quantify level of confidence to guide future research priorities.

Definition of micronekton and component taxa

Adult euphausiids, mesopelagic fish, mysids, pelagic shrimps, cephalopods.

Review of past year's activities

- a. Dr. Brodeur noted problems in getting a Co-Chairman and new members added by member countries. The original request was made at the previous PICES meeting but

new Co-Chairman (Dr. Yamamura) and members (Drs. Kawaguchi, Seki and Yoon) were not officially nominated until August 2001. This substantially held back progress of the Working Group in 2001.

- b. The Co-Chairman of WG 14, Dr. Brodeur, was invited to report on member nations' research on micronekton over the last three decades at the PICES/CoML/IPRC Workshop in Honolulu, in March 2001. Summary tables were completed and published in the PICES Scientific Report No. 18.
- c. Writing of WG report and integration of previous work began.

Format and composition of WG report

- a. Emphasize dominant species but will include any information available on rare species;
- b. Apply geographic zonation (by adaptation of zones used by WG 11 on *Marine birds and mammals*);
- c. Include reproduction, early life history, and demographic rates;
- d. Discuss prey-predator relationships and rates (diet composition, amount eaten (flux), predators and predation rate, parasites and disease);
- e. Consider sampling issues (net towing, other sampling, acoustics, visual, design);
- f. Compile existing data inventory for North Pacific; and
- g. Provide recommendations for future research.

Activities for upcoming year

- a. Design survey to send to “experts” inside and outside the PICES community concerning sampling issues, problems, and suggestions. It was proposed to make the survey available through the PICES website. Summarize the results of this survey for WG report;
- b. Modify assignments of writing tasks for WG report;
- c. Discuss timetable to complete draft report by next PICES Annual Meeting;
- d. Convene inter-sessional meeting of subset of WG members in conjunction with the AGU/ASLO Ocean Sciences Meeting, in February 2002, to assimilate progress on report. Travel support is needed for 1-2 WG members to attend; and
- e. Begin discussion of new sampling gear or

methods. Discussed modification of existing gear and new technology. Discussed potential for PICES-sponsored evaluation and inter-calibration cruise.

Proposed sessions for PICES XI

WG 14 recommends convening a BIO/POC/FIS Topic Session on *Biophysical mechanisms facilitating trophic transfer of zooplankton, euphausiids and other micronekton to top predators over shallow topography such as shelf breaks, canyons and seamounts* at PICES XI in Qingdao (People’s Republic of China). This session will take advantage of the large international audience there for the International GLOBEC Open Science Meeting. WG 14 requests funding for 1 invited speaker from outside the PICES region to give a global perspective on this topic.

BIO Endnote 4

BIO/POC/FIS Topic Session for PICES XI

Title (tentative): *Importance of shallow topography (shelf and seamounts) in concentrating oceanic organisms and facilitating transfer to higher trophic levels*

Proposed Conveners: Orio Yamamura (Japan), John F. Dower and Richard D. Brodeur

Description: Dense aggregations of zooplankton and micronekton have been reported in the boundary zone between the coastal and offshore waters of various regions. These include shelf-breaks, submarine canyons and shallow banks. Aggregations have also been reported in oceanic areas such as seamounts, which display enclosed

circulation or high productivity. Reid et al. (1991) have proposed the term “mesopelagic boundary community” to describe the fauna distributed in the boundary zone in which mesopelagic waters impinge on the upper slope of a land mass. These concentrations are utilized by many marine predators, including pelagic and demersal fishes and cephalopods, marine mammals, and seabirds. The transfer of oceanic energy to shallow regions may represent an important and unappreciated flux affecting production in these systems. Studies related to biophysical mechanisms responsible for these aggregations and their trophic implications are encouraged.

BIO Endnote 5

Report of the Advisory Panel on *Marine Birds and Mammals*

The second meeting of the *Marine Bird and Mammal* Advisory Panel (MBMAP) was held from 13:30 – 18:00 hours on October 7, 2001. The meeting had two parts, a report from Panel members on progress towards recommendations from the MBMAP meeting in 2000, and a workshop led by Drs. Anne B. Hollowed and

Elizabeth A. Logerwell. The Co-Chairmen, Drs. Hidehiro Kato and Douglas F. Bertram, called the meeting to order and welcomed the participants (*MBMAP Endnote 1*). The Panel reviewed the terms of reference (*MBMAP Endnote 2*) and the draft agenda that was adopted as presented (*MBMAP Endnote 3*).

Old business

The members attended CCCC Task Team meetings and workshops (BASS, MONITOR and REX). Advisory Panel members reported on the CPR/seabird program, a pilot study of ship based auto-video monitoring of marine mammals, time-series data sets for upper trophic levels in the NEP (including a brief discussion of monitoring of key species at key locations with similar methods), bird diet data from Japan and British Columbia, and marine mammal diets in the eastern and western North Pacific.

Sessions at future Annual Meetings

The Panel proposed to meet as a group for one half-day during the next Annual Meeting to discuss the progress of team members on specific assignments. This meeting should be scheduled to minimize overlap with CCCC Task Team meetings and workshops.

MBMAP also supports the idea of a separate half-day Topic Session advanced by Drs. Hollowed and Logerwell entitled *Responses of upper trophic level predators to variation in prey availability: An examination of trophic level linkages* (see recommendations and MBMAP Endnote 4).

Requests for travel funding

MBMAP requests support for Panel members from Russia to attend the next Annual Meeting.

Relations with other organizations, programs and projects

MBMAP members were assigned to the following CCCC Task Teams:

BASS – Drs. H. Kato and T. Loughlin

MODEL - Dr. P. Ross

MONITOR – Drs. D. Bertram and W. Sydeman

REX – Dr. Y. Watanuki

Members participated in and reported on the CCCC Task Team workshops and meetings as follows:

BASS: Dr. Loughlin attended the BASS Workshop and reported that marine birds and mammals were frequently mentioned there. He agreed to provide available information as requested. BASS is proposing an inter-sessional

workshop for 2002 on *Using models to test hypothesis on affect of climate change on the North Pacific subarctic gyre system.*

MONITOR: Drs. Bertram, Sydeman and Kato attended the MONITOR Workshop and Task Team meeting. Dr. Kato presented a summary of their pilot survey of an auto-video monitoring system for cetacean sighting on the R/V *Oshoromaru*. The CPR program invited seabird and marine mammal observers to participate in its east-west transects. MONITOR would like to convene an inter-sessional workshop in 2002 to: (1) describe/define a “basic suite” of North Pacific ecosystem monitoring variables and measurements locations, and (2) review measurements technologies for platforms of opportunity.

REX: Dr. Watanuki attended the REX Workshop and reported that the group was going to summarize time-series data of size-at-age of herring (and other epipelagic fish). It was acknowledged that seabird diet could potentially contribute to that goal.

Recommendations to BIO

The following recommendations were discussed and agreed upon by the Panel:

1. National funding for MBMAP members to attend sessions should be sought.
2. Member nations should be encouraged to catalogue and present a brief review of important time-series of marine bird and mammal vital rates, dietary and contaminant studies in the PICES region (in a METADATA format), and disseminate this information to the PICES community to provide evidence for upper trophic-level responses to oceanographic, climate and anthropogenic effects. It is hoped that this task would be given the highest priority, and further, that such a catalogue can be submitted to MBMAP next year.
3. Member nations should be persuaded to support and to contribute time-series data to the Pacific Seabird Monitoring database, the Pelagic Seabird database for the North Pacific, and to foster the development of similar databases for marine mammals. Analyses of existing databases and

- opportunities for comparative examinations should also be given high priority.
4. Identification of key colonies/rookeries, species, and methods for monitoring, is vital to the development of integrated long-term monitoring and research programs to investigate the status of marine birds and mammal populations in the North Pacific.
 5. Member nations should be encouraged to compile up to date time-series information on selected key species of marine birds and mammals for contribution to a North Pacific Ecosystem Status Report.
 6. The Panel supports the continuation of the CPR program with shipboard seabird and marine mammal observers when feasible, and the development of methodology for monitoring.
 7. The Panel proposes to continue development over the next two years of a comparison of time-series of prey use by marine birds and mammals in the eastern and western North Pacific Ocean, for the purpose of detecting differences in trophic structure and timing of responses by marine birds and mammals in relation to climate change events.
 8. The Panel recognizes that there are data gaps in the final report of WG 11 on *Consumption of marine resources by marine birds and mammals in the PICES region*, and where feasible, it would be valuable to assemble information to update the report.
 9. The Panel recommends convening a Topic Session on *Responses of upper trophic level predators to variation in prey availability: An examination of trophic level linkages (MBMAP Endnote 4)*.

MBMAP Endnote 1

Participation List

Members

Douglas F. Bertram (Canada, Co-Chairman)
 Hidehiro Kato (Japan, Co-Chairman)
 Thomas Loughlin (U.S.A.)
 Peter Ross (Canada)
 William Sydeman (U.S.A.)
 Yutaka Watanuki (Japan)

Observers

Norihisa Baba (Japan)
 Evelyn Brown (U.S.A.)
 Elizabeth Connors (U.S.A.)
 Mark Hipfner (U.S.A.)
 Anne B. Hollowed (U.S.A.)

George L. Hunt (U.S.A.)
 David Hyrenbach (U.S.A.)
 Tsutoma Ikeda (Japan, BIO Chairman)
 Jaime Jahncke (Peru/U.S.A.)
 Gary Kaiser (U.S.A.)
 Kouichi Kawaguch (Japan)
 Elizabeth A. Logerwell (U.S.A.)
 Kenneth Morgan (Canada)
 Phillip Mundy (U.S.A.)
 Douglas Neilson (U.S.A.)
 Yasunori Sakurai (Japan)
 Joanna Smith (U.S.A.)
 John E. Stein (U.S.A., MEQ Chairman)
 Andrew Trites (Canada)
 Akihiko Yatsu (Japan, WG 16 Co-Chairman)

MBMAP Endnote 2

Terms of Reference

1. Provide information and scientific expertise to BIO, CCCC Program, and, when necessary, to other Scientific and Technical Committees with regard to the biology and ecological roles of marine mammals and seabirds;
2. Identify important problems, scientific questions, and knowledge gaps in assessing the roles of marine mammals and seabirds in marine ecosystems;
3. Assemble relevant information on the biology of marine mammals and seabirds and disseminate it to the PICES community through scientific reports and symposia;
4. Develop strategies to improve collaborative, interdisciplinary research with marine mammal and birds researchers and the PICES scientific community.

MBMAP Endnote 3

MBMAP Meeting Agenda

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|-------|--|-------|---|
| 13:30 | Opening remarks | 14:35 | Bird diet data in the eastern N. Pacific |
| 13:35 | CPR/seabird program | 14:50 | Mammal diets in the North Pacific |
| 13:50 | CPR/marine mammal program | 15:05 | Future business |
| 14:05 | Time-series data for upper trophic levels in the NEP | 15:30 | Workshop on <i>Changes in prey availability to mammals, seabirds and fish: mechanisms and effects</i> |
| 14:20 | Bird diet data in the western N. Pacific | | |

MBMAP Endnote 4

Workshop on *Changes in prey availability to mammals, seabirds and fish: Mechanisms and effects*

The workshop provided an opportunity for researchers throughout the North Pacific to share information on the dynamics of prey availability to upper trophic levels. Potential topics included: 1) mechanisms resulting in changes in prey availability, e.g., local to regional-scale environmental variability; and 2) the effects of changes in prey availability on mammals, seabirds or fish. The workshop had two goals: (1) to share insights among PICES researchers, and (2) to discuss holding a special topic session on this subject during the PICES Eleventh Annual Meeting in 2002.

The workshop included four invited overview presentations of research in the PICES region:

Andrew Trites (University of British Columbia, Canada): *Nutrition, physiology, foraging, energetics and modeling studies of Steller sea lion.*

Yutaka Watanuki (Hokkaido University, Japan): *Inter-year variations in prey and chick production among three species of seabirds breeding at Teuri Island located in the Japan Sea coast of Hokkaido.*

Vladimir I. Radchenko (Sakhalin Research Institute of Fisheries and Oceanography, Russia): *Variability of Pacific salmon feeding strategy in different environmental and food conditions during the sea life period.*

Elizabeth A. Logerwell (Alaska Fisheries Science Center, U.S.A.): *Overview of National Marine Fisheries Service research on the interactions between groundfish fisheries and the prey of Steller sea lions.*

Participants at the workshop included:
Canada: Douglas F. Bertram, Kenneth Morgan, Peter Ross, Andrew Trites
Japan: Tomomori Azumaya, Yukimasa Ishida,

Hidehiro Kato, Yasunori Sakurai, Yutaka Watanuki, Orio Yamamura, Akihiko Yatsu
Russia: Alexander Kaev, Vladimir I. Radchenko
U.S.A.: Richard D. Brodeur, Elizabeth Conners, Michael Dagg, Nancy Davis, Mark Hipfner, Anne B. Hollowed (Co-Convenor), George L.

Hunt, David Hyrenbach, Elizabeth A. Logerwell (Co-Convenor), Thomas Loughlin, Allen Macklin, Kristin Marby, Douglas Neilson, Brenda Norcross, Julia K. Parrish, Jeffrey J. Polovina, Michael Seki, Joanna Smith, John E. Stein, William Sydeman, Lucy Vlietstra, Jen Zamon

MBMAP Endnote 5

Proposed MBMAP Topic Session for PICES XI

Title: *Responses of upper trophic level predators to variation in prey availability: An examination of trophic level linkages (½-day)*

Potential Co-Convenors: Anne B. Hollowed (U.S.A.), Hidehiro Kato (Japan), Elizabeth A. Logerwell (U.S.A.), Gordon A. McFarlane (Canada) and S. Song (China)

Purpose and scope

There is increasing interest in this topic as evidence accumulates of the impact of physical forcing on prey resources over a wide range of temporal and spatial scales. Predators respond to changes in their prey resources in a variety of ways, and this is important to gauging their potential as indicators of ecosystem variability. In addition, ecosystem management strategies need to define inter-relationships of species within an ecosystem, and the roles of predation in the regulation of marine populations. Papers on the responses of seabirds, mammals, and fishes will be solicited. The responses discussed could be at the individual (behavioral, physiological), or population level (reproductive performance) using ecological or evolutionary perspectives. Dimensions of prey availability could be quantity, spatial and temporal distribution, or quality. The session will be designed to complement and expand upon other BIO Topic Sessions.

Potential invited speakers

The convenors will decide upon which specific topics and themes to be explored and will determine the most appropriate speakers. *We would like to discuss the possibility of obtaining*

PICES support for 2 invited speakers. Support will also be sought through member nations.

Publication

We are interested in the publication of selected papers from the session in a peer-reviewed international journal.

Why PICES?

The proposed topic session would complement the BIO/POC/FIS Topic Session proposed by WG 14 on *Importance of shallow topography (shelf and seamounts) in concentrating oceanic micronekton and facilitating transfer to higher trophic levels*. The session proposed by WG 14 would focus on the physical mechanisms resulting in changes in prey availability, and the session proposed here would focus on the response of predators to those changes. The Topic Sessions could be scheduled sequentially.

Given the interdisciplinary nature of PICES, the PICES Annual Meeting is an ideal forum to present research on this topic. For instance, an invited paper on the linkages between physical oceanography, prey availability and predator response would address the interests of PICES Committees, such as BIO, POC, FIS, and the CCCC Program. Papers on responses such as changes in predator diet would relate to the modeling work of the MODEL and BASS Task Teams. Papers on the effects of changes in prey quality (e.g. toxin concentrations) would be of interest to MEQ.

This session would also present a unique opportunity to meet for scientists from a broad range of fields of research: from climate change to animal physiology.

BIO Endnote 6

ICES/PICES/GLOBEC Zooplankton Symposium (First Announcement)

Time and location

The International Council for the Exploration of the Seas (ICES), the North Pacific Marine Science Organization (PICES), and the International Global Ocean Ecosystem Dynamics (GLOBEC) program announce a Zooplankton Production Symposium titled *The Role of Zooplankton in Global Ecosystem Dynamics: Comparative Studies from the World Oceans*, to be held May 20-23, 2003, at the Congress Center in Gijón, Spain.

Rationale

The main goal of the Symposium is to define the current "state of the art" of zooplankton ecology and to determine key research initiatives to be pursued in the 21st century. The sponsorship of the meeting reflects the global nature and global importance of the role of zooplankton in food chain dynamics and in biochemical cycles. A focus of this meeting will be the effect of climate variability and global climate change on zooplankton. Although local, regional and global contributions are solicited, comparative studies between ocean basins are particularly encouraged. Since many ongoing research programs within ICES and PICES as well as national and regional GLOBEC and JGOFS research efforts are now entering a mature phase, papers that have a synthesis theme are especially welcome.

Scientific Program

Following on the highly successful 2nd Zooplankton Production Symposium in Plymouth (August 1994), papers are invited in the following topic sessions. Each session is a full day unless otherwise indicated:

- Physical variability and zooplankton population dynamics
- Role of zooplankton in biogeochemical cycles
- Climate influences - what are long-term zooplankton data sets telling us?
- New approaches to zooplankton modelling (morning session)

- Progress in molecular biology (afternoon session)
- Application of new technologies (morning session)
- Comparative life histories and life cycles of zooplankton populations within and between the North Pacific and North Atlantic
- Role of microzooplankton in the sea
- Special Workshops and/or afternoon excursions in/near Gijón

Two sessions run concurrently each day and each session will include one or two keynote speakers followed by contributed papers. For all sessions, poster submissions are encouraged and ample time will be allocated for poster viewing both during the day and during evening social events.

It is expected that the meeting will result in the publication of selected papers in a special issue of an international journal to be announced. The 2nd Zooplankton Production Symposium resulted in the publication of 45 papers in the 1995 ICES Journal of Marine Science 52:1-773.

Convenors

The Symposium has three Convenors representing the three sponsors: Dr. Roger Harris (Chairman, GLOBEC Scientific Steering Committee), Dr. Tsutomu Ikeda (Chairman, PICES Biological Oceanography Committee) and Dr. Luis Valdés (Chairman, ICES Working Group on Zooplankton Ecology).

Organizing Committee

This jointly-sponsored ICES/PICES/GLOBEC Symposium will be a major event for marine ecologists in general, and planktologists in particular. The preparation and practical planning for this event will be the responsibility of the Steering/Organizing Committee:

ICES

M. Alcaraz (Spain) - miquel@icm.csic.es
P. Wiebe (U.S.A.) - pwiebe@whoi.edu

PICES

T. Ikeda (Japan) - tom@pop.fish.hokudai.ac.jp
W. Peterson (U.S.A.) - Bill.Peterson@noaa.gov

GLOBEC

R. Harris (UK) - rph@pml.ac.uk
S. Poulet (France) - poulet@sb-roscoff.fr

Local arrangements

Local arrangements in Gijón will be coordinated by Dr. Luis Valdés, with assistance from Drs. J.M. Rodrigues and Dr. J.A. Gutierrez-Morán. For further information on cultural and touristic activities in this region of northern Spain, see “www.infogijon.com”.

Abstracts

Scientific sessions will include invited and contributed papers. Contributed papers will be selected for oral or poster presentation. All interested persons must provide abstracts of their presentation to the PICES Secretariat by November 15, 2002. Please indicate at which session you would prefer the paper to be presented. Abstracts should not exceed 250 words. Please submit your abstract through the PICES Home Page at “www.pices.int”, or by e-mail as an MS Word attachment to “secretariat@pices.int”. On-line abstract submission will be activated in February 2002.

Extended abstracts

Following the requirements of annual ICES and PICES meetings, all contributors are requested to bring to the meeting summaries of both oral and poster presentations (maximum of 2,500 words plus graphs and tables). Details of the format will be provided with letters of acceptance in January 2003.

Special Workshops

We anticipate that there may be interest by others in organizing special workshops that would be convened before, during or after the Symposium, on specialized topics relating to zooplankton ecology. We ask that all interested persons contact the Organizing Committee who will then assist in coordination of planning.

Pre-Registration

A Final Announcement with detailed scientific and logistic information will be circulated in February 2002. Please pre-register with us if you are interested in this Symposium and would like to receive the Final Announcement. The on-line Pre-Registration function will be activated on the PICES Home Page “www.pices.int” on November 1, 2001.

Information

Current information about the Symposium is available on the websites of all the sponsoring organizations and will be updated periodically:

PICES	www.pices.int
GLOBEC	www.globec.org
ICES	www.ices.dk

For other queries, please contact PICES at:

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BIO Endnote 7

Proposed BIO Topic Session in 2002

Title: *Food web dynamics in marginal seas: Natural processes and the influence of human impacts* (1-day)

Co-Convenors: Paul J. Harrison (Canada) and possible Chinese or Korean scientists

Description:

Marginal seas are often one of the most productive regions of the world's oceans. They are sites of abundant natural resources, including various fisheries. In some cases, nutrients and production are transported offshore, enriching these areas. Human impacts are evident in some areas of these marginal seas and these

anthropogenic inputs including excessive nutrients, heavy metals and various organics, have altered various foodwebs. Sometimes changes in the phytoplankton species have resulted in changes in higher trophic levels including fisheries. Excessive nutrients may lead to over production of phytoplankton which are not eaten by zooplankton, and the decomposition of the bloom at depth may result in hypoxic or anoxic bottom waters with significant effect on the benthos. We need to understand these changes and their causes, if we are to better manage our marginal seas. Papers on the influence of excessive anthropogenic inputs on food web dynamics are encouraged.

