REPORT OF ADVISORY PANEL ON MICRONEKTON SAMPLING INTER-CALIBRATION EXPERIMENT

The PICES Advisory Panel on *Micronekton sampling inter-calibration experiment* (hereafter MIE-AP) was established to evaluate efficacy of sampling gears and the procedures employed by different investigators to sample micronekton in the North Pacific and other parts of the world's oceans.

MIE-AP met on the morning of October 13, 2006. After brief introductions of the participants (*MIE-AP Endnote 1*), a total 4 presentations were made on the results and data processing from the two field experiments organized by the Panel in 2004 and 2005, followed by questions and brief discussions on future activities (*MIE-AP Endnote 2*).

MIE-AP workshop (Agenda Items 2 and 3)

The workshop (W9) reviewed data and results from the MIE-1 cruise (off the west side of Oahu Island, Hawaii, October 6–13, 2004) and the MIE-2 cruise (in Oyashio waters off Japan, September 27–October 3, 2005). Sample processing and analysis was discussed, as were other sampling gears to be compared, and plans for the MIE-3 experiment. The summary of the workshop can be found in the *Session Summaries* chapter of this Annual Report.

MIE-AP future activities (Agenda Item 4)

Further data analysis

Although substantial progress has been achieved in the analysis of the MIE-1 and MIE-2 data, further analyses are required. In particular:

- The size-structure approach used by Dr. Evgeny Pakhomov for the MIE-1 data could be applied to the MIE-2 data sets.
- An inter-comparison between the MIE-1 and MIE-2 data should be attempted.
- The acoustic data need to be analyzed and compared in the light of gear densities. At first, this should be done separately for each cruise.

Other sampling gears to be tested

- The results of the MIE-2 experiment revealed that the MOHT gear is among the most reliable and cost-effective micronekton gear developed to date, providing high quality and quantity micronekton samples. The development of a closing/opening mechanism could put this gear in the position to become a standard micronekton gear in the North Pacific and elsewhere in the world.
- It has been noted that the RMT-8 gear, as well as Russian micronekton sampling gear, should be included in future experiments to allow comparisons.
- Dr. Hiroya Sugisaki presented some preliminary results on the development a novel technology (a combination of acoustic and high resolution video imaging) to quantify deep-sea micronekton. MIE-AP felt that this technology could be beneficial and encouraged Dr. Sugisaki to describe the preliminary results of trials during the next PICES Annual Meeting.

Possibility of the MIE-3 experiment

MIE-AP felt strongly that a third experiment (MIE-3) is required to complete the geographical coverage, and to include gear types that were missed during the first two inter-comparisons. The major problem at the moment is the availability of ship time, and in this regard MIE-AP suggests pursuing three options:

- MIE-AP should work towards establishing a joint NPAFC-PICES research activity on micronekton sampling and conduct MIE-3 in the Bering Sea. Initial and encouraging contacts have already been made and will be followed in the forthcoming year.

- Dr. Orio Yamamura will apply for ship time (likely for RV *Hokko-Maru*) to carry out the MIE-3 experiment off Japan.
- The possibility of obtaining ship time for the MIE-3 experiment either in the Bering or Okhotsk Sea should be negotiated with the Russian Delegation.

In the light that the Panel activities will largely be concentrated in the northern Pacific seas, MIE-AP felt strongly that the membership of the Advisory Panel should be increased, particularly from Russia and the United States.

Proposal of workshop/session at PICES XVI

MIE-AP proposed to convene a workshop at PICES XVI on "*Lessons learned during MIE-1 and MIE-2: Reconciling acoustics and trawl data*" with the objectives of (a) finalizing MIE-1 and MIE-2 analyses, (b) presenting and discussing acoustic data sets from both cruises, (c) comparing ICES and PICES inter-calibration experiments, and (d) discussing recent developments in the field of micronekton quantitative techniques (*MIE-AP Endnote 3*). Travel funds from PICES are requested for two invited speakers.

MIE-AP Endnote 1

Participation list

Members

Richard D. Brodeur (U.S.A.)
Kazushi Miyashita (Japan)
Evgeny A. Pakhomov (Canada, Co-Chairman)
Orio Yamamura (Japan, Co-Chairman)

Observers

Yoshioki Oozeki (Japan)
Larissa Pakhomova (Canada)
Hiroya Sugisaki (Japan)
Andrei V. Suntsov (Russia)
Hiroki Yasuma (Japan)

MIE-AP Endnote 2

MIE-AP meeting agenda

1. Welcome and introductions
2. MIE-1 results and data processing:
   - E.A. Pakhomov, M.P. Seki, A.V. Suntsov, R.D. Brodeur and K.R. Owen. *Comparison of three sampling gears during the first Micronekton Intercalibration Experiment (MIE-1): Size composition of selected taxonomic groups and total macroplankton and micronekton*
   - A.V. Suntsov, M.P. Seki, E.A. Pakhomov and R.D. Brodeur. *Diversity and abundance of Hawaiian ichthyoplankton: Comparison of three types of midwater net*s
3. Discussion on MIE-2 results and data processing:
   - O. Yamamura, H. Sugizaki, S. Abe, K. Sadayasu, R.-I. Matsukura, K. Miyashita, A. Hino and T. Tokai. *Inter-calibration of micronekton sampling gear during the 2005 MIE-2 cruise*
   - H. Yasuma, K. Miyashita and O. Yamamura. *Acoustic identification and density estimate of a lanternfish,* Diaphus theta*, off Hokkaido, Japan*
4. Discussion on future MIE-AP activities:
   a. further data analysis
   b. other sampling gears to be tested
   c. possibility of the MIE-3 experiment
   d. workshop/sessions at PICES XVI

MIE-AP Endnote 3

Proposal for a ½ or ¾ -day workshop at PICES XVI on
"Lessons learned during MIE-1 and MIE-2: Reconciling acoustics and trawl data"

Micronekton is one of the important but largely understudied components of marine ecosystems functionally linking small zooplankton and higher trophic levels. Recent advances in acoustic devices and efforts to standardize sampling gears undertaken by both PICES and ICES communities have made the sampling of micronekton more precise. Nevertheless, the issue of inter-calibrating the growing number of micronektonic gears is still unresolved. The PICES Advisory Panel on *Micronekton sampling inter-calibration experiment* (MIE-AP) organized two field experiments (off Hawaii in 2004 and off Japan in 2005) to collect comparative data for several micronekton sampling gears and a wealth of acoustic information. The main objective of this workshop will be: (1) to finalize the analysis and to compare MIE-1 and MIE-2 data sets; (2) to present and discuss acoustic data sets from both cruises; (3) to compare ICES and PICES inter-calibration experiments; and finally (4) to discuss new developments in the field of micronekton quantitative techniques.

Recommended convenors: Evgeny A. Pakhomov (Canada) and Orio Yamamura (Japan).