

REPORT OF THE ADVISORY PANEL ON *CONTINUOUS PLANKTON RECORDER SURVEY IN THE NORTH PACIFIC*

The Advisory Panel on *Continuous Plankton Recorder Survey in the North Pacific* (CPR-AP) met from 18:00–20:00 h on October 28, 2009 under the chairmanship of Dr. Phillip R. Mundy. The list of participants and agenda are found in *CPR-AP Endnotes 1 and 2*.

AGENDA ITEM 2

Report on CPR activities in 2008–2009

Advice

The CPR continues to be an excellent international marine monitoring program that produces biological and physical data sets which are unique in time and space, and from which information is made available in a timely manner to support a growing legacy of scientific publications. CPR exemplifies how PICES fosters cooperation and communication among nations in North Pacific marine science. Financial and in-kind support from Canada, Japan, the United States and CPR's originating agency, the Sir Alister Hardy Foundation for Ocean Sciences, is sufficient to permit operation of the transects in 2010–2012. However, more support is desirable for processing samples. CPR-AP continues to pursue funding from the U.S. National Science Foundation and other national sources with the support of the Science Board and the efforts of the Secretariat. The Panel requests, through MONITOR, that the Science Board continue to support the Executive Secretary's annual letter of information to selected agencies that are potential partners in the CPR Consortium.

Sampling 2009 – Dr. Sonia Batten reported that sampling was close to desirable levels in 2009. In a normal year the east to west (E–W) transect is sampled three times (April, June and October) and the north to south (N–S) transect is sampled six times (March to September). In 2009 the E–W transect was sampled three times: April/May, June/July, August/September and the N–S transect was sampled five times: March, April, May, June, August. Based on 25% of samples processed in the southern and eastern portions of the transects, biomass in May 2009 was about at the average of 2000–2008, and substantially higher than in May 2008. Nevertheless, zooplankton biomass in late 2008 was unusually high (see Hamme *et al.* below).

Sampling 2010 – If the U.S. NSF proposal is not funded, funds currently committed may permit about 75% of the desired level of sampling to be conducted. The Panel was asked to provide advice on how to approach the possibility of reduced capacity to process samples in 2010. The basic trade-off presented between processing all samples at a lower rate, and focusing on fully processing some geographic regions while archiving other regions without processing. The Panel was asked to offer perspectives to Dr. Batten.

Publications and presentations

There were three scientific presentations at PICES-2009 based on CPR results. Hamme *et al.* on “*Natural volcanic iron fertilization of the Subarctic North Pacific*” (W1-5905). Zooplankton biomass in the late summer of 2008 was unusually high due to high numbers (1.5 to 8 times previous years) of large copepods (*C. pacificus* and *N. cristatus*). Does this fit the pattern of cool temperatures favoring large copepods, or are there other explanations such as changing vertical distribution of large zooplankton in response to food availability? Batten *et al.*'s presentation on “*Ship-of-opportunity observations of mesoscale eddies*” (W9-5819) examined the number of taxa and zooplankton biomass associated with mesoscale eddies in the Gulf of Alaska with different geographic origins. The third presentation was Mackas *et al.*'s on “*Perspectives on a decade of change in the Alaska Gyre: A comparison of three Northeast Pacific zooplankton time series*” (BIO-P-5937) which confirmed consistency of the CPR.

Funding

Dr. Batten reported substantial progress in securing funding for the PICES CPR program. The CPR Funding Consortium had two contributing members in 2008–2009: Department Fisheries and Oceans Canada (DFO) and the North Pacific Research Board NPRB (U.S.A.). In order to reach the level of support required to sample adequately, it was necessary for SAHFOS to provide additional funds. Two additional funding sources were added in 2009. Dr. Sanae Chiba (Japan) obtained funding for the processing of western Pacific samples in Japan. In preparation, Japanese scientists traveled to SAHFOS in Plymouth, England to understand CPR sample processing conventions and a workshop on “*Continuous Plankton Recorder survey and long-term observations of plankton ecosystems in the North Pacific*” in Yokohama (September 30–October 1) was hosted by Dr. Hiroya Sugisaki. Also in 2009, the Exxon Valdez Oil Spill Trustee Council approved financial multi-year support that will conclude in 2013. As of now, direct funding from DFO, NPRB and EVOSTC are at approximately 70% of full costs for operating two transects (E–W and N–S), including processing samples. Current funding, when supplemented by sample processing support from Japan and continued input from SAHFOS, is expected to keep the two transects in place; however, it permits fewer samples than desirable to be processed.

There is one immediate prospect for additional funding. A proposal to the U.S. National Science Foundation with participation by Dr. Russell Hopcroft, University of Alaska Fairbanks, has been submitted. If funded it would permit processing of a substantial number of Gulf of Alaska samples in 2010.

AGENDA ITEM 3

Reports from national representatives

Canada

Dr. David Mackas reported that Canadian scientists continue to be active in analyzing CPR data and using them to make inferences on the status of North Pacific ecosystems, for example, see the Batten and Mackas publication on “Shortened duration of the annual *Neocalanus plumchrus* biomass peak in the Northeast Pacific” (2009, MEPS 393: 189–198; <http://www.int-res.com/abstracts/meps/v393/>).

Japan

Dr. Sugisaki reported on Japan’s efforts to secure funding for analysis in Japan of the CPR samples taken to the west of 170°E. Funding from JSPS Kakenhi (Kiban-A) FY-2009 to 2013 is approximately \$400,000 for the five years. He also asked for funds from the Japan–UK research collaboration fund. Leading scientists are Drs. Sanae Chiba (JAMSTEC, CPR sample analysis), Kosei Sasaoka (physical-chemical data analysis), Hiroya Sugisaki (FRA; MONITOR Chairman), Tsuneo Ono (HFRI, physical-chemical data analysis). Japan is adding value to CPR data by investigating the use of stable isotopes as a proxy for mapping nitrate depletion along the CPR transect.

Russia

Dr. Igor Shevchenko reported that TINRO is exploring the possibility of establishing CPR in Peter the Great Bay and in deep water using a ferry that sails to Vladivostok (Russia), Donghee (South Korea) and Sakaiminato (Japan). International collaboration is appreciated. Dr. Shevchenko has received information from Dr. Batten on the CPR regarding the kinds of data that may be acquired by it and the costs of acquisition and sample processing. Dr. Batten has offered further assistance to Dr. Shevchenko in this inquiry.

U.S.A.

The Alaska Ocean Observing System (AOOS) has been level funded so it is not expected to be a source funding for the CPR Consortium in 2010. AOOS is part of the national system of regional observing systems for which funding legislation has been pending. Additional U.S. sources being pursued for the Consortium are the NOAA Program Office for the Integrated Ocean Observing System and the NOAA Fisheries Office of

Science and Technology. To assist in this regard, a renewal of the information sent to potential Consortium members in 2008 was requested by the U.S. representative and endorsed by CPR-AP. NOAA Fisheries' Pacific Islands Fisheries Center (Hawaii) plans to tow a CPR between Honolulu and Mariana Islands in January 2010 although it is not yet certain how sample analysis will proceed. It is a feasibility study to determine what kinds of information CPR may provide on this region.

AGENDA ITEM 4

New business

Panel members were encouraged to visit the CPR page on Wikipedia to edit and offer contributions.

CPR-AP Endnote 1

CPR-AP participation list

Members

Sonia D. Batten (Canada, SAHFOS)
 Hyung-Ku Kang (Korea)
 David L. Mackas (Canada)
 Phillip R. Mundy (U.S.A., Chairman)

Observers

Alexander Bychkov (PICES)
 Skip McKinnell (PICES)
 Tsuneo Ono (Japan)
 Igor Shevchenko (Russia)
 Hiroya Sugisaki (Japan, MONITOR Chairman)

CPR-AP Endnote 2

CPR-AP meeting agenda

1. Welcome (Mundy)
2. Report on CPR activities in 2008 – 2009 (Batten)
3. Reports from national representatives on status of CPR (all) - Proposal from Japan (Sugisaki)
4. New business - Request from Russia for information on CPR, CPR on Wikipedia
5. Receive comments on 2008 – 2009 CPR draft annual report (Mundy)
6. Adjourn