

Report of the Advisory Panel on *Continuous Plankton Recorder* in the North Pacific

The Advisory Panel on *Continuous Plankton Recorder in the North Pacific* (AP-CPR) met from 18:00–19:00 h on October 17, 2014, in Yeosu, Korea. The meeting was chaired by Dr. Phillip R. Mundy. A list of participants and the agenda is found in *AP-CPR Endnotes 1* and *2*. Following the meeting, the AP enjoyed a dinner hosted by AP member, Dr. Hyung-ku Kang (Korea).

Advice

The North Pacific CPR continues to build a unique set of observations on zooplankton species composition that is invaluable for understanding the extent and effects of global climate change in the North Pacific. Information from NP CPR is made available in a timely manner and supports a growing legacy of scientific publications. NP CPR exemplifies the benefits derived from PICES' fostering of cooperation and communication among its member countries in North Pacific marine science.

AGENDA ITEM 3

North Pacific CPR Consortium update and solicitation

The current funding for CPR activities continues to be reasonably secure. Funding is now provided by Canada (Department of Fisheries and Oceans, DFO), Japan (Japan Society for the Promotion of Science, JSPS, and Innovative Area and Japan Agency for Marine-Earth Science and Technology, JAMSTEC), the Sir Alister Hardy Foundation for Ocean Science (SAHFOS), and the United States (North Pacific Research Board, NPRB, and Exxon Valdez Oil Spill Trustee Council, EVOSTC). Canadian funding from DFO is expected to continue through early 2015, with annual renewal expected; NPRB has committed funding through mid-2019 with renewal expected; EVOSTC funding is secure through 2016 with renewal expected; and funding from Japan will be provided from JAMSTEC's Research and Development Center for Global Change (RCGC), through FY2018. NOAA's National Marine Fisheries Service will continue to support NP CPR through its positions on the boards of directors of NPRB and EVOSTC.

AGENDA ITEMS 4 AND 5

CPR activities in 2013 – 2014 and update on Global Alliance of CPR surveys (Batten)

Dr. Sonia Batten reported that normal sampling effort was maintained during the sampling year. Given the extremely warm conditions experienced in the Gulf of Alaska and Bering Sea, sampling was initiated earlier than normal. Six north–south transects were conducted in March through August, and three east–west transects were completed in April to May, June to July, and August to September. For the past four years gear deployment has included instruments to record temperature. The anomalously warm temperatures of 2014 were documented, with temperatures in May being particularly high. Data are available on the PICES web site (see *AP-CPR Endnote 3*). Preliminary analyses from samples on the Alaskan shelf indicate very high numbers of small copepods and relatively low numbers of larger copepods.

Dr. Batten reported briefly on the Global Alliance of CPR. Findings to date show that the pattern of small copepods observed during warm periods and large copepods during cool periods in the North Pacific does not appear to be consistent with observations from other parts of the world (see web links in *AP-CPR Endnote 3*).

AP-CPR-2014

AGENDA ITEM 6

Reports and comments of national representatives and guests

Dr. Batten presented the report of the Japanese NP CPR Team on behalf of Dr. Sanae Chiba who was unable to attend. Japan has responsibility for the analysis of samples taken west of longitude 170°E. Microscopic analysis of FY2013 samples is complete. Seasonal data for FY2001–2013 are archived, covering observations on zooplankton and phytoplankton taxonomy, and N and C stable isotopes of *Neocalanus* species. Dr. Chiba is co-researcher with Principal Investigator, S. Ian Smith (JAMSTEC), for development of the trait-based marine ecosystem model (FY2013~2017) funded by the Japan Science and Technology Agency (JST) innovative science funding program, CREST. Japan has an active and growing research program under Dr. Chiba. Post-doctoral fellow, Dr. Tomoko Yoshiki (JSPS), is working on discovering links between upper layer plankton community structure and deep-sea transport using CPR data, sediment trap data and various biogeochemical data taken at JAMSTEC's time-series observation site K2 since 2000. Dr. Carmen Comas (JST CREST) has joined the CPR analysis team, bringing a strong background in multivariate community analysis. Dr. Comas has so far worked on the Odate data set, and is planning to use NP CPR data for topics such as zooplankton functional type and species diversity. Results of recent research can be found in the publications:

- Chiba, S., S. Batten, T. Yoshiki, Y. Sasaki, K. Sasaoka, H. Sugisaki, T. Ichikawa (2014) Temperature and zooplankton size structure: climate control and basin-scale comparison in the North Pacific. *Ecology and Evolution* (submitted).
- Yoshiki T., S. Chiba, H. Sugisaki, T. Ichikawa, S. Batten (2014) Northerly shift of warm-water copepods in the western subarctic North Pacific: Continuous Plankton Recorder samples (2001–2010), *Fisheries Oceanography* (under second review).

In June 2014, Dr. Chiba and her Japanese colleagues conducted the workshop, “*Toward the better collaboration between scientists and policy makers*” at the University of Tokyo. The workshop featured Dr. Abigail McQuatters-Gollop of SAHFOS who gave a talk entitled “*Using science to inform marine policy: A case study of marine ecosystem monitoring in the UK.*”

AGENDA ITEM 7

Future of AP-CPR

The Advisory Panel recommended to MONITOR that it be disbanded, with its functions being addressed as a standing agenda item on the MONITOR agenda. If MONITOR accepts the recommendation and successfully takes it forward to Science Board, the role and functions of AP-CPR would continue within the committee structure of MONITOR.

AP-CPR has been instrumental in establishing and securing long-term funding for the North Pacific Continuous Plankton Recorder and fostering international cooperation in utilization of CPR observations. The NP CPR continues to be the premier example of PICES' success in fostering and sustaining international cooperation and communication in support of long-term scientific monitoring. The role and functions of the AP-CPR in continuing the NP CPR are as vital today as when it was founded under the leadership of Dr. Warren Wooster in 1998. Nonetheless, it was the consensus of the Panel that the need for holding meetings separate from MONITOR no longer exists.

AGENDA ITEM 8

Presentations at PICES-2014

BIO Paper Session

- *Pseudo-nitzschia* diversity in the North Pacific from Continuous Plankton Recorder surveys. (Rowena Stern, Vera Trainer, Stephanie Moore and Sonia Batten);

- Poster: Phenology of calanoid copepod: *Calanus pacificus* associated with sea surface temperature in the western subarctic North Pacific (Tomoko M. Yoshiki, Sanae Chiba, Tadafumi Ichikawa, Hiroya Sugisaki and Sonia Batten).

BIO/MONITOR/TCODE Topic Session (S4) on “*Use of long time series of plankton to inform decisions in management and policy concerning climate, ecosystems and fisheries*”

- Big YES to sustainable ecosystem management and why NO to sustainable monitoring efforts? – Gap between demand and supply in Japanese case (Sanae Chiba);
- The role of plankton time-series in managing our seas in a climate of macroecological change (Invited speaker, Abigail McQuatters-Gollop, SAHFOS);
- The North Pacific Continuous Plankton Recorder survey (Sonia Batten, SAHFOS).

AP-CPR Endnote 1

AP-CPR participation list

Members

Sonia Batten (SAHFOS)
Hyung-Ku Kang (Korea)
Phillip Mundy (USA, Chairman)

Observers

William Sydeman (USA)

AP-CPR Endnote 2

AP-CPR meeting agenda

1. Welcome and introductions (Mundy)
2. Additions and modifications to agenda
3. North Pacific CPR Consortium update and solicitation (Mundy and Batten)
4. Overview of CPR activities in 2013 – 2014 (Batten)
5. Update on Global Alliance of Continuous Plankton Recorder (CPR) Surveys (Chiba and Batten)
6. Reports and comments of national representatives and guests (All)
7. Develop recommendation to MONITOR on future of AP-CPR
8. Receive suggestions for 2014 AP-CPR Annual Report (Mundy)
9. New business
10. Adjourn

AP-CPR Endnote 3

Web links

PICES AP-CPR homepage: http://www.pices.int/members/advisory_panels/CPR.aspx

PICES CPR data: <http://www.pices.int/projects/tcprstnp/default.aspx/#data>

Global Alliance of CPR Surveys: <http://www.globalcpr.org/>

North Pacific CPR Survey: <http://www.globalcpr.org/about-gacs/north-pacific-cpr-survey.aspx>