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

The Advisory Panel on *Continuous Plankton Recorder Survey in the North Pacific* (hereafter CPR-AP) met from 17:00–19:00 hours on October 15, 2006, under the chairmanship of Dr. Charles B. Miller. A list of participants and the meeting agenda can be found in *CPR-AP Endnotes 1* and *2*.

Dr. Sonia Batten, principal investigator of the PICES CPR Pacific project, was unable to attend the meeting. She provided materials for a presentation made by Dr. David L. Mackas, who has replaced Dr. David Welch as co-principal investigator on the project. Both the north–south and east–west runs of the CPR survey were sampled in spring-summer-autumn of 2006, and it was the seventh year of regular tows on north–south survey routes.

Program description and results are kept up to date at the Pacific project section of the Sir Alister Hardy Foundation for Ocean Research (SAFHOS) website at http://192.171.163.165/pacific_project_papers.htm. The annual report to the Exxon Valdez Oil Spill Trustee Council for 2006 will soon be placed there.

North–south CPR transect (Agenda Item 1)

It was the third year that the north–south transect has been occupied from Cook Inlet (British Columbia) to Puget Sound (Washington State). Seven transects were spaced approximately monthly from March to October. There were gear problems on several of the transects but even for those, some data are intact. The October tow was to "replace" the lost samples. Processing is well along, and approximately half the samples are complete. The preliminary results suggest that 2006 was a relatively high year for meso-zooplankton biomass, comparable to 2005, whereas 2004 was about half that of the other two years. In 2004, biomass was also low compared to earlier sampling (2000–2003, 5 times per year) from Prince William Sound (Alaska) to Long Beach (British Columbia). Causal explanation of the variation is likely to be possible, but is not ready to report. Not only does overall system biomass (implying production) vary from year to year, but timing of seasonal life-cycle events of the dominant copepod species can vary up to ~45 days between extreme years. The small sample size (6 years) suggests that the full variation in this important aspect of regional ecodynamics is even greater.

East–west CPR transect (Agenda Item 2)

The east–west route from Vancouver to Yokohama, in its seventh year, was run three times in 2006. Results from earlier years show correspondences between plankton assemblages and 10 distinctive zones of habitat along the transect. Some revisions to this habitat identification will be forthcoming based on 2005–2006 results.

Seabird survey along the east–west CPR transect (Agenda Item 3)

Dr. William J. Sydeman (Point Reyes Bird Observatory) described the current status and progress of bird and mammal observations that have been made during daylight on all east-west trips that towed the CPR since 2002. The same scientist made all observations. Twenty-three species of birds accounted for 97% of sightings, of which 12 are found mostly in the western Pacific, and 6 in the east. Especially large counts occur in "shearwater hotspots", where sooty shearwaters can be seen in tens of thousands. These are all relatively close to land, at La Perouse Bank, Unimak Pass and offshore of coastal Honshu. Overall, the bird and mammal observations are a rich dataset, and findings are in the early stages of conversion to publication by Dr. Sydeman and colleagues.

Project status – funding (Agenda Item 4)

Continued funding for the Pacific CPR project is uncertain. The north–south transects have been funded, since their inception, by the Gulf Ecosystem Monitoring (GEM) program of the Exxon Valdez Oil Spill (EVOS) Trustee Council. This funding has supported sampling and analysis through 2006 for this transect. The EVOS Trustees have almost eliminated the GEM program, and the call for proposals to fund research in 2007 had a focus on herring stocks in Prince William Sound (PWS). The CPR project is germane to these stocks because herring (and salmon) survivorship depends upon the availability of planktonic food, much of which comes into PWS from the shelf, an important sector surveyed by the CPR survey. Even though the towing routes have been displaced to the west, the trajectory of the Alaskan Coastal Current insures that much the same plankton communities are sampled. Thus, events like the very low plankton biomass of 2004 that was observed with the CPR are certain to have been regional in extent and impact, including PWS. The impact of variations in zooplankton is both bottom-up (plankton are herring food) and top-down. Walleye pollock with sufficient planktonic food do not prey on herring larvae and juveniles, but when forced to broaden their diets due to low plankton availability, begin to affect herring and salmon populations through predation.

Dr. Batten's proposal for 2007 to the EVOS Trustees received good reviews and a recommendation to fund it from the Scientific Review Committee. However, the program Science Director recommended that the project not be funded on the basis of low relevance to PWS herring. The EVOS Executive Director also recommended "do not fund". CPR-AP unanimously recommended to the PICES MONITOR Technical Committee that a letter be sent to the EVOS Trustees strongly urging that the recommendation of the Science Review Committee be accepted, and that the CPR Pacific project receive funding for 2007. Later in the week, MONITOR approved this recommendation, and the CPR-AP and MONITOR Chairmen drafted the letter (*CPR-AP Endnote 3*). It was sent to Science Board and Governing Council for approval.

It is clear that stable funding is a critical issue for the CPR Pacific project. The EVOS Trustees have decided to terminate GEM, and to spend the remaining trust fund principal. Very little of that expenditure will be for science in any case, and focus will be on land acquisitions and short-term activities in PWS. There will be no continuing EVOS endowment for marine science in PWS or elsewhere in the oil spill trajectory.

The North Pacific Research Board will continue to have a permanent endowment for scientific studies. They have had a strong interest in the CPR project, funding the east–west transects in recent years and continuing the work through 2007. Whether they can be convinced to take over funding for the north-south runs is an issue we will have to test in the very near future. It would be a very good thing if we could obtain funding from NOAA and DFO, and it is hoped that some part of the funds will flow to the wide array of proposed ocean observing system projects (*e.g.*, AOOS). The CPR-AP members and project investigators are urged to be alert to opportunities for such funding.

CPR-AP Endnote 1

Participation list

Members

Charles B. Miller (U.S.A., Chairman
David L. Mackas (Canada)
Jeff M. Napp (U.S.A.)
Vladimir I. Radchenko (Russia)

Observers

George L. Hunt (U.S.A.)
Hyung-Ku Kang (Korea)
Phillip R. Mundy (U.S.A.)
William J. Sydeman (U.S.A.)

CPR-AP Endnote 2

CPR-AP meeting agenda

1. Discussion of recent CPR results from the Cook Inlet to Puget Sound (Seattle) route
2. Discussion of CPR results from the Vancouver to Yokohama (VY) route
3. Discussion of bird survey results from the VY route
4. Matters affecting continued funding
5. Other time-series surveys in the North Pacific

CPR-AP Endnote 3

Draft letter from PICES to the EVOS Trustee Council

Exxon Valdez Oil Spill (EVOS) Trustee Council
Anchorage, Alaska

Dear Sirs and Madams,

We would like to suggest that continued funding of the EVOS-supported, continuous-plankton-recorder (CPR) study in the Gulf of Alaska is one of the best investments in marine science that the Trustee Council could make for 2007. The project was developed under the auspices of the North Pacific Marine Science Organization (PICES), and it has been financially supported throughout its work (1997 to 2006) by the EVOS Trust. The results are already extraordinary in respect to duration among marine ecosystem observations, and the scientific payoff has been excellent. Like all time-series studies, the longer it continues, the more informative it becomes. From it we now know with certainty that the plankton community of the Gulf of Alaska (the food-chain base for Alaskan fisheries like pollock, salmon and herring) varies strongly from year-to-year. With the CPR data, we begin to see how these variations are caused. We begin to have a clear picture of the shift in life-cycle seasonality between higher and lower latitudes. The principle investigator of the CPR Pacific project, Dr. Sonia Batten, can take pride in generating these ecological insights, and PICES takes pride in having fostered the project. Dr. Batten has been quick to publish and share the project results at the annual Alaska Marine Science Symposium. The EVOS Trustees can take great pride in having supported this accomplishment from the beginning. As representatives of PICES, we strongly urge that support be continued for at least 2007. The likelihood that other financing can be found is at best modest, given the circumstances of marine research agencies in the United States and Canada. The EVOS Trustee Council could make no other scientific investment with better certainty of success.

Concern was expressed in the publicly available, EVOS Science Director's comments on Dr. Batten's proposal that relevance of a transect that did not include Prince William Sound (PWS) was not made clear. We are aware that PWS is the area for which herring stocks are the main concern of the EVOS 2007 call for proposals. However, we call your attention to the fact that plankton stock levels all along the shelf from PWS to the eastern Aleutians are closely coupled by the Alaska Coastal Current (which this proposal samples), and that year-to-year and month-to-month variations will be much the same at both longitudes. Moreover, early EVOS-supported work on the plankton-salmon and plankton-herring relationships in PWS showed that influx to PWS from plankton stocks on the shelf is critical to the food supply in the Prince William Sound for herring and other fish. Supply of shelf plankton to the Prince William Sound also determines the degree of predation by pollock on juvenile pink salmon. Ending the continuous plankton survey project will leave all the funded herring projects without a vital piece of data.

Let us say it one more time. The continuous-plankton-recorder survey in the Gulf of Alaska is among the best scientific projects that EVOS funds have supported. Funding should be continued to obtain the

longest possible time-series and, thus, the maximum possible benefit to the preservation and management of Alaska's living marine resources.

Charles B. Miller, Ph.D.
Prof.-Emeritus, Oceanography
Oregon State University
Chairman, PICES-CPR-Advisory Panel

Jeffery Napp, Ph.D.
Supervisory Research Oceanographer
NOAA, PMEL, Seattle
Chairman, PICES Monitor Technical Committee