

REPORT OF WORKING GROUP 23 ON *COMPARATIVE ECOLOGY OF KRILL IN COASTAL AND OCEANIC WATERS AROUND THE PACIFIC RIM*

The meeting of Working Group on *Comparative Ecology of Krill in Coastal and Oceanic Waters around the Pacific Rim* (WG 23) held its second meeting on October 23, 2009 in Jeju, Korea. A list of participants and the meeting agenda can be found in *WG 23 Endnotes 1* and *2*. The meeting was chaired by Ms. Tracy Shaw, as the Co-chairs, Drs. Song Sun and William Peterson, were unable to attend.

AGENDA ITEM 2

Presentation on status of krill research in each PICES member country

The meeting started with presentations on the status of krill research in each PICES member country that had a representative in attendance: Canada (Mackas), Japan (Okazaki), Korea (Ju), U.S.A. (Shaw). These presentations were based on the Working Group's Term of Reference #6 (Convene a krill workshop at the GLOBEC Open Science Meeting in May 2009). This led to discussion of what topic to address in the first synthesis paper and what data to collect to enhance the available data set. Brood sizes of *Euphausia pacifica* were a likely candidate as scientists in China and Japan have recently conducted such experiments and there is a possibility that scientists from Canada and Korea will be able to conduct brood size experiments during their research cruises next year. Collection of such data is ongoing in Dr. Peterson's lab at the Northwest Fisheries Science Center (NOAA) and there is a hope to recruit other scientists working on the California Current.

AGENDA ITEM 3

Specific terms of reference (TOR)

The other main topic of discussion (TOR #1) was on assembling lists of existing data that will contribute to an analysis and comparison of the life histories of *E. pacifica* and *Thysanoessa*. Egg production, development times, growth rates, distribution and abundance, migration, biomass, hot spots, seasonality of spawning in relation to phytoplankton blooms, role of krill as grazers, vertical flux of carbon in fecal pellets (and moults?) had been discussed previously and to this list krill strandings were added. The latter are reported regularly and, although there are many theories as to why they occur, they are not well understood.

The translation into English of papers which would facilitate a comparative ecological analysis is another goal of this Working Group. Noting that translation of entire papers is a tremendous project, the Group considered translating only parts of each paper (such as the abstract and conclusions) and expanding the figure captions to include more detail. It is possible that this could be done cooperatively by members of the Working Group. Upon completion, the documents could be made available via the PICES website.

AGENDA ITEM 4

Research during PICES/ICES/FAO symposium

WG 23 members discussed the possibility of "hands-on" research in association with the PICES/ICES/FAO Symposium on "*Climate change Effects on Fish and Fisheries*" in Sendai, Japan, from April 26–29, 2009. Dr. Yuji Okazaki will look into the possibility of a visit to his lab at the Tohoku National Fisheries Research Institute in Shioyama, Japan. The Peterson lab at Oregon State University, U.S.A. has been invited to participate on a Korean research cruise in 2010. These two activities are in accordance with TORs #2 (Prepare a research plan to help fill gaps in our understanding, and aid regional collaborative research efforts. Explore ways and means of facilitating exchange of scientists between laboratories and on research cruises) and #3

WG 23-2009

(Convene “hands-on” practical workshops with krill biologists (including students and established scientists) from PICES member countries to help them initiate and carry out krill research programs. These workshops could be convened before each PICES Annual Meeting, or at other times as appropriate. Protocols for experimental work have been already published on the PICES website at <http://www.pices.int/projects/Euphausiid/PICES%20Protocols%20COMPLETE.pdf>).

AGENDA ITEM 5

Attendance at Workshop W4 on “*Marine ecosystem model inter-comparisons*” at PICES-2009

WG 23 discussed collaboration with PICES modelers (TOR #5; Work with modelers to better parameterize euphausiids in the NEMURO model and other models so as to explore their role in coastal and oceanic food chains). Specifically, that euphausiid modeling should incorporate the differing characteristics of different life stages, *i.e.*, in a model, early larval stages behave similarly to a copepod but older life stages behave quite differently from copepods. Dr. David Mackas reported on the modeling efforts of Dr. David Preikshot at the University of British Columbia, Canada. He is using ECOPATH to model different life stages of euphausiids and is including gelatinous zooplankton, with approximately monthly time steps.

WG 23 Endnote 1

WG 23 participation list

Members

Michael J. Dagg (U.S.A.)
Se-jong Ju (Korea)
Hyung-ku Kang (Korea)
Michio J. Kishi (Japan)
David L. Mackas (Canada)
Yuji Okazaki (Japan)
C. Tracy Shaw (U.S.A.)

Observers

Harold Batchelder (U.S.A.)
Hye-Seon Kim (Korea)

WG 23 Endnote 2

WG 23 meeting agenda

1. Welcome and introductions
2. Presentation on status of krill research in each PICES member country
3. Discuss specific terms of reference
4. “Hands-on” research during PICES/ICES/FAO symposium on “Climate change effects on fish and fisheries”
5. Attendance at WS 4 on “*Marine ecosystem model inter-comparisons*” at PICES-2009