

**Life histories of the planktonic copepods,
Calanus finmarchicus and *Calanus
helgolandicus*: Advances in understanding in
the Gulf of Maine and across the North
Atlantic**

March 22, 2010
Portland Regency Hotel
Portland, Maine



Meeting Objectives

- Review present capabilities in terms of model development and data needs
- Exchange information on available demographic and vital rate data for two species of *Calanus* in the North Atlantic, *C. finmarchicus* and *C. helgolandicus*, throughout their range.
- Identify data analysis priorities and willing participants for large scale comparative studies of *Calanus* across the whole Atlantic, encompassing the entire range of both species and using the compiled data sets.
- How to move forward: Make a tentative timetable for completion of analysis related to the compiled data sets and a timetable for data access

Morning Agenda

I. Status of *Calanus* life cycle modeling (NW Atlantic)

Frédéric Maps (Univ. Maine and Gulf of Maine Research Institute). IBM modeling: *C. finmarchicus* in the Gulf of Maine and Gulf of St. Lawrence

Andrew Pershing (Univ. of Maine and Gulf of Maine Research Institute). Challenges to coupled modeling and climate change scenario testing

Dennis McGillicuddy (Woods Hole Oceanographic Institution). Inverse models of *C. finmarchicus* in the North Atlantic

Rubao Ji (Woods Hole Oceanographic Institution). A modeling study on processes controlling the biogeographic boundary of *Calanus* copepods in the North Atlantic – Arctic region

Plenary discussion

Afternoon agenda

II. Data Module: “*Calanus* data in the North Atlantic: the who, what, where and when”

Jamie Pierson (Univ. Maryland)/Peter Wiebe (WHOI)

Roger Harris (PML, UK)/Delphine Bonnet (Univ. Montpellier II, France)

(Webjorn Melle (Institute Marine Research, Norway))

Astthor Gislason (Marine Research Institute, Iceland)

Erica Head (Bedford Institute of Oceanography, Canada)

Catherine Johnson (BIO, Canada)

Stéphane Plourde (F. Maps) (Institute Maurice Lamontagne, Canada)

Jeffrey Runge (Univ. Maine and GMRI)

Plenary

Data analysis priorities (I)

- Spatial map of abundance of diapausing *C. finmarchicus* in the N. Atlantic (using data presently available and new research). (Pierson)
- Vertical distribution also helpful (D. McGillicuddy, R. Ji)
- Demographic datasets in the NE Atlantic showing seasonal changes in stage structure, with data on body size and lipid content of late copepodid stages (F. Maps IBM) (Maps, Pierson)
- Compilation of body size and body mass, including lipid mass, relationships among regions and species (Pierson)
- Proxies for food availability: POC

Data analysis priorities (II)

- Comparative studies of physiological responses to environmental factors (e.g. ep rates and chl a., development time temperature relationships, not only Chel, Cglac, and Chyp, but also Cfin in NE Atlantic) (**Runge/Harris**)
- Data on start and end of growth season (Ji)
- Proxies for food availability: POC
- What to do about future changes to predators, hence mortality field?

Next steps forward

- Compilation of lists of data sets (Jamie to put on web)
- Comparative study of egg production-chl. a relationships, following up on Head et al comparison of Lab. Sea and Norwegian Sea (**Runge lead**)
- Compilation of body size/body mass, lipid mass relationships (**Pierson lead**)
- Demographic data set for C.hel. and NE Atlantic for IBM model application (**Maps, Runge, Pierson**)
- Comparative study of lipid content in CV (**Pierson lead, Jekielek**)

- Spatial map of diapausing Calanus across the N. Atlantic
- Characterization of vertical distribution with season