

information on the abundance and distribution of trophically important taxa such as krill. However, predictions of abundance (or biomass density) using the IBM approach are difficult (as described in the earlier talk by Wendy Gentleman). This talk explored the extent to which some of the advantages of the IBM approaches could be incorporated into concentration-based ecosystem models. One of these is explicit recognition that different stages of the life history of an organism feed on different prey, have different mortalities and different behaviors (such as diel vertical migration amplitudes), and different growth rates. Results from 0-D and 2-D models were used to illustrate how some of these “IBM features” were included in a concentration-based model. Specifically, a stage structured algorithm that eliminates numerical diffusion (*e.g.*, rapid growth through the life history) was implemented using the mean-age model (Hu *et al.*, 2008, *MEPS*, 360, 179–187). The 0-D case study illustrated the strong interaction of development rate and stage dependent mortality on the total biomass of krill in the model, with strong consequences, acting through competition for food, for other consumers in NEMURO. The 2-D NEMURO model (a vertical section across the Oregon continental shelf) revealed that the mean-age model could be implemented in a way that allowed proper mixing and advection of biomass and mean

age information for krill (or other plankters) using the standard ROMS codes. Important questions in plankton population dynamics are best answered by IBMs, but other questions are better examined by concentration, stage-structured or PLM-based methods. The appropriate modeling approach depends on the specific question.

During the last hour of the workshop, a general discussion of IBMs ensued, which included tradeoffs of super-individual *vs.* individual modeling, dealing with density dependence and feedback to forcing fields (especially prey depletion), examining methods for linking IBMs with other model approaches, such as ecosystem and structured models, and the need for modelers to work more closely with observational and experimental scientists to better constrain the biological, ecological and physiological information/parameterization of models. By working together, the cycle of testing models to data will suggest new experiments and observations and identify shortcomings in the models. Finally, there is a desire to better document individual-based models to enable independent evaluation of model results. A standard for Overview, Design Concepts and Details (ODD) has been proposed for the documentation of IBMs (Grimm *et al.*, 2010; *Ecological Modelling*, 221, 2760–2768).

New Book Release on the 100th Anniversary of the T/S *Oshoro Maru*

It was my great pleasure to edit the book, “100th Anniversary of the T/S *Oshoro Maru*” together with many people who have worked with the *Oshoro Maru* over the years. The book includes photos and articles depicting the rich history of the *Oshoro Maru* training ships, from the first, which was built in 1909, to the most recent, fourth ship built in 1984. The *Oshoro Maru II* was commissioned in 1927 and was replaced in 1962 by the *Oshoro Maru III*. The annual summer cruises since 1955 have allowed long-term ecosystem observations, and have advanced cooperative research among PICES member countries. The data collected during T/S *Oshoro Maru* cruises are invaluable for addressing scientific problems of the North Pacific. More than 250 scientific papers have been published using these data. Recognition of the importance of the *Oshoro Maru* monitoring program led to the receipt of the first PICES Ocean Monitoring Service Award (POMA) at PICES-2008, in Dalian, China (www.pices.int/awards/POMA_award/POMA_award.aspx).

Copies of the book are available to PICES colleagues (contact me at ssaitoh@salmon.fish.hokudai.ac.jp), but the number is limited, and they will be distributed on a first come, first served basis. They will be sent by surface mail and priority will be given to library or public use.

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