Executive summary

WGIAB was setup in 2007 as a forum for developing and combining ecosystem-based management efforts for the Baltic Sea. WGIAB has given itself 3 main tasks:

1) to conduct holistic ecosystem assessments based on large multivariate datasets;
2) to consider the use of ecosystem modelling in the assessment framework;
3) to develop adaptive management strategies for the different Baltic Sea ecosystems.

During the meetings in 2007 and 2008 WGIAB concentrated on collection and analyses of large multivariate datasets. This effort resulted in ecosystem assessment for 7 subsystems of the Baltic Sea (ICES 2008b). These ecosystem assessments demonstrated dramatic changes (i.e. regime shifts) during the last 3 decades on all trophic levels of the ecosystems related to climate variability and human exploitation.

While the development of adaptive management strategies is planned for 2010, WGIAB during the 2009 meeting concentrated on developing and conducting ecosystem modelling. In an "ensemble approach" the responses of cod and sprat SSB to five scenarios of fishing of cod (continued high fishing mortality, implemented cod management plan, cod fishing moratorium) and sprat (increased fishing) were investigated. To this end, four single species cod models, four multispecies models and one foodweb model have been used. In addition, these fishing scenarios were tested assuming either no climate change, or a future warmer and less saline Baltic Sea. The responses of cod and sprat to the fishing and climate scenarios tested differed between the nine models, both quantitatively and qualitatively. However, the ensemble modelling approach used herein allowed a straightforward comparison of the range of possible outcomes projected by the diverse models used. Thus, the ensemble modelling approach provided a means to (1) assess whether these differences in predictions also resulted in different conclusions on management, and (2) draw general conclusions valid across all single species and foodweb models used.

Three general conclusions were made across models and climate scenarios: (i) business as usual fishing of cod will hinder a recovery of the Eastern Baltic cod stock, (ii) a reduction in fishing pressure on cod is predicted to have a smaller positive effect on the cod stock in a future changing climate than if climate change is not accounted for, and (iii) the effects of increased sprat fishing on the cod and sprat stocks are highly uncertain, ranging from no effect to extinction depending on model and climate scenario. The results produced are preliminary as several of the models are still in a developing phase, and as climate effects were evaluated on very few runs. However, based on the experience of the "ensemble modelling" WGIAB started to develop a strategy on the use of ecosystem modelling in the future assessment framework, which will be continued in 2010.

The participation in WGIAB increased considerably during its lifetime (12 participants in 2007, 23 in 2008) to 28 participants from 8 countries during this year meeting. Due to this enlarged participation in 2009, WGIAB was able to update and analyze datasets for the holistic ecosystem assessments. During the 2009 meeting, WGIAB managed to update and analyse the data series of four subsystems, i.e. CBS, GoR, GoF and COAST (for info on subsystems see ICES, 2008). The datasets of the 3 remaining subsystems will be updated intersessionally. Additionally, a data mining exercise has been conducted for Western Baltic ecosystems. Intersessionally these

data series will be screened for use in an IEA for the area with the goal to perform the analyses on next year meeting.

Further activities of the 2009 WGIAB meeting included i) planning for a contribution to the Baltic Sea Action Plan and HELCOM BIO, ii) reviewing the research on ecosystem analysis and modelling in the Baltic Sea region, iii) contributing to answer a EC request through WKMAMPEL, and iv) input to other ICES EGs and a back-to-back meeting with TGBALT developing a new structure to ensure that scientific advances of Baltic Sea specific expert groups can support and further the Baltic Sea advice produced by regular assessment working groups, and how this can be represented under the ICES structure.