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REPORT OF THE STEERING GROUP ON QUALITY ASSURANCE OF BIOLOGICAL MEASUREMENTS IN THE BALTIC SEA

Gdynia, Poland, March 16-19, 1993

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1 OPENING OF THE MEETING

The Steering Group met at the Sea Fisheries Institute in Gdynia, Poland, under the chairmanship of Dr Lars Hernroth. The meeting had been preceded by a short joint meeting with the Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea. During that meeting, representatives from ICES and HELCOM expressed their views on the tasks of the two Groups, and ways of synchronizing their work were discussed. The report of the Joint Meeting is contained in C.M. 1993/E:9.

The list of participants is given in Annex 1.

2 APPOINTMENT OF RAPPORTEUR

Dr Torkel G. Nielsen was appointed Rapporteur.

3 ADOPTION OF THE AGENDA

The draft agenda, provided by the Chairman, was adopted with the comment that agenda item 10 would probably be discussed in connection with several other items. The agenda is attached as Annex 2.

4 TERMS OF REFERENCE FOR THE STEERING GROUP

The terms of reference for the meeting were given in ICES Council Resolution 1992/2:40 from the 80th Statutory Meeting. They are:

- to agree on the overall aims of the Steering Group and coordinate them with those of the Steering Group on Quality Assurance of Chemical Measurements in the Baltic Sea;
- to draft a plan of action for the Steering Group, including topics that should be covered, relevant activities, and a tentative timetable;
- to decide on ways to link the work of the Steering Group to that on the revision of the BMP Guidelines and to the relevant working groups within HELCOM, the EC, Baltic Marine biologists and ICES;
- to propose ways for funding the activities of the Steering Group.

Under this agenda item, the Chairman also reminded the participants of the tasks of the Group as described by the Second Meeting of the HELCOM Environment Committee (EC 2/19). These tasks are:

- to coordinate the development and implementation of a QA programme for laboratories participating in the Baltic Monitoring Programme;
- to give guidance on practical questions relating to QA;
- to give guidance on how QA data should be used in relevant assessment work;
- to participate in, and to give advice on, the revision of the Guidelines for the Baltic Monitoring Programme for the Fourth Stage;
- to prepare QA guidelines for the relevant measurements;
- to identify relevant reference material and to organize, together with the Secretariat, the distribution of those materials to laboratories participating in the Baltic Monitoring Programme;
- to identify costs associated with QA;
- to report on progress in QA annually to the Environment Committee and to make proposals for action by the Commission.

5 IDENTIFICATION OF BMP LABORATORIES AND CONTACT PERSONS

Prior to the meeting, the HELCOM Environment Secretary had submitted an updated list of laboratories participating in the Baltic Monitoring Programme. This list is annexed to the report of the Joint Meeting. The Steering Group decided to name, for internal use, some additional contact persons who will serve as specialists in national monitoring programmes (Annex 3).

6 CURRENT QA PROCEDURES

Participants were asked to inform the Steering Group about the status of QA procedures at the national and institute (laboratory) levels of their respective countries. This information revealed that QA procedures were either already in existence or were about to be introduced in all countries represented at the meeting. However, it was obvious that the planning of such measures was more advanced for chemical parameters compared to those relevant for biological measurements, as discussed in this report.

Most laboratories have participated in international intercomparison and intercalibration exercises. However,

for biological measurements, most of these exercises have merely been intercomparisons and not intercalibrations in the true sense of the term. The training courses in phytoplankton taxonomy may, however, serve as an example of an advancement within the field of quality assurance for biological measurements. The status of implementation of QA programmes in the countries represented at the meeting is as follows:

- Denmark:** There are no currently running QA programmes. A revision of the national monitoring programme has been initiated.
- Finland:** Finland is in the process of initiating a national QA programme which starts with a description of methods.
- Germany:** A national QA programme is being planned in association with the revision of the national monitoring programme.
- Latvia:** The methods of the BMP Guidelines are now in the process of being introduced. So far, there have been no QA procedures at the national level.
- Poland:** Presently there are no running QA programmes. Intercalibration exercises in the Pomeranian Bay are planned together with German colleagues.
- Sweden:** The national monitoring programme has recently been evaluated by external experts. This evaluation will form the background for the revision of the programme which will contain QA.

7 STRATEGY FOR THE DEVELOPMENT OF A QA PROGRAMME AND LINKS TO THE REVISION OF THE GUIDELINES AND TO OTHER RELEVANT WORKING GROUPS WITHIN HELCOM, ICES AND BMB

First, the aim of the QA programme was discussed. It was agreed that the aim is to ensure that relevant and reliable data are produced and that these data meet the defined aims of the BMP. The three principal components of QA should be: (1) parameter relevance, (2) quality control, and (3) data comparability.

It was decided to follow a stepwise procedure, outlined below.

- Prepare a critical analysis of the present Baltic Monitoring Programme in terms of quality assurance.

- Make suggestions for a revision of the Guidelines where possible new parameters are introduced and where the QA guidelines accompany each parameter;
- Provide for the development and introduction of individual laboratory manuals to achieve internal quality assurance in laboratory practice.

This procedure aims to improve the existing monitoring programme, to revise guidelines on QA procedures, and to implement by including these changes by January 1996.

8 IDENTIFICATION OF PARAMETERS TO BE COVERED

In view of the aims of the QA programme described above, the relevance of the components constituting the present BMP was discussed with regards to the aims of the BMP.

It was generally agreed that there is an urgent need for a thorough revision of parts of the BMP programme. This is especially the case for the pelagic components. These conclusions are supported by statements in a number of documents submitted to the HELCOM Environment Committee as well as by conclusions in the Second Periodic Assessment of the State of the Marine Environment of the Baltic Sea, 1984-1988.

The Steering Group suggested that priority should be given to a process-oriented pelagic programme which is based on high frequency sampling at a limited number of stations. In such a programme, the introduction of micro-, and picoplankton (including bacterioplankton) should be considered. Rate measurements regarding production and decomposition should also be part of these considerations. There was general agreement that a high frequency measuring programme is essential for monitoring the pelagic ecosystem and this does not contradict the aim of the BMP to follow the long-term trends in the Baltic Sea. On the contrary, it might be the only way to detect changes.

The proposed revision suggests a holistic approach avoiding the traditional tendency towards compartmentalization (i.e., into microbiology, phytoplanktology and zooplanktology. It is therefore suggested that the two HELCOM Working Groups (on microbiology and phytoplankton), in cooperation with the BMB Working Group on Zooplankton, organize a means by which an outline of a revised pelagic programme can be prepared. The Steering Group recommended that the chairmen of these Working Groups hold a joint session with their members in connection with the next BMB Symposium, which is to be held in Riga in September

1993. These symposia are usually very well attended by active scientists and therefore is, expected to be a suitable occasion for outlining a new strategy for pelagic monitoring.

It was also suggested that two additional parameters, fish community structure and phyto-benthic plant and animal communities, should be considered as possible mandatory parameters. The Steering Group recommended that the HELCOM *ad hoc* Working Group on Coastal Monitoring undertake the task of evaluating this suggestion.

The Steering Group was aware that these considerations will most likely call for reductions and exclusions within the present programme.

The Steering Group was also aware that these proposals may delay the completion of the revision of the BMP Guidelines. However, the benefits of the revision of the programme, as seen from scientific and QA aspects, clearly justify such a delay.

It was furthermore concluded that, since several countries are presently revising their national monitoring programmes (including the introduction of QA procedures), it is an exceptionally good time to consider changes in the BMP and its Guidelines.

As the second step in forming a QA programme, it was discussed how quality can be ensured at the parameter level. It was agreed that intercomparisons and intercalibrations, as well as joint cruises and the exchange of scientists, are needed to improve the present Guidelines. In the new revised Guidelines, a detailed chapter on quality assurance should be provided for each separate parameter. Such a chapter would constitute the QA guidelines for that parameter. A mandate to prepare such QA guidelines has already been given to the HELCOM Working Groups on Microbiology and Phytoplankton. The Steering Group recommended that, in addition, a request be put to the BMB Working Group on Zooplankton to comment on the present Guidelines and give suggestions regarding QA for the new version. A similar request should be sent to the ICES Benthos Ecology Working Group for comments regarding benthic parameters.

To achieve the third step in this task, to develop and introduce laboratory manuals for internal quality assurance, it was decided to use a modification of the QUASIMEME questionnaire as a basis for obtaining an overview of the present state of working practices regarding biological parameters at the BMP laboratories. The results from such a questionnaire will be used to identify those areas of quality management and practice that need most attention in future workshops and inter-comparison/intercalibration activities.

9 OUTLINE OF A TENTATIVE TIME TABLE

The Steering Group discussed a possible schedule for the work ahead. The aim is to have the new Guidelines, including the quality assurance provisions, approved and printed by the end of 1995. The meeting agreed on the following schedule:

TENTATIVE TIME SCHEDULE

- 1993: Drafting (by relevant expert groups) of an improved pelagic monitoring programme which will be submitted to the fourth meeting of the HELCOM Environment Committee in October 1993.
- 1994: Conducting two workshops, one for pelagic biological parameters and the other for zoobenthos.
- 1995: Conduct two intercomparisons/intercalibrations, one for pelagic biological parameters and the other for zoobenthos. Preparation of improved Guidelines, including quality assurance chapters. Finalization of the improved pelagic and benthos monitoring programme.
- 1996: Introducing of an improved Baltic Monitoring Programme and improved Guidelines (also containing quality assurance provisions).

10 LINKS TO THE REVISION OF THE GUIDELINES AND TO OTHER RELEVANT WORKING GROUPS WITHIN HELCOM, ICES AND BMB

This topic was covered under agenda item 7, above.

11 ANY OTHER BUSINESS

Concerning Reference Materials (RMs): The ICES representative offered to make inquiries about relevant materials that are available from governmental agencies and commercial firms. It was decided that this work should be coordinated with that concerning RMs for the QA Group on Chemical Measurements. A list of available RMs including prices should be presented at the Workshop in Hamburg later this year.

Concerning the costs of running a QA programme for biological measurements: The Steering Group decided to inform HELCOM and national bodies that such activities will need continuous financial support.

For the near future, the Steering Group identified the costs associated with the proposed meeting in Riga this

summer and the two workshops proposed for 1994 (see Recommendations).

12 ADOPTION OF RECOMMENDATIONS

The Steering Group adopted the following Recommendations:

The general outline of the Baltic Monitoring Programme

1. The Steering Group recommends that the HELCOM Working Groups on Microbiology and Phytoplankton and the BMB Working Group on Zooplankton jointly prepare a pelagic monitoring programme based on the suggestion of a process-oriented approach with a limited number of high frequency sampling stations.
2. The Steering Group recommends that a draft of such a programme be written and agreed upon by these Working Groups in conjunction with the BMB Symposium in Riga in September 1993. This draft should be submitted to the HELCOM Environment Committee for consideration at its meeting in October 1993.
3. The Steering Group recommends that the above Working Groups should also nominate a contact laboratory that will be responsible for arranging and hosting a workshop on pelagic biological parameters in 1994 and an ICES/HELCOM intercomparison/intercalibration exercise in 1995. These proposals should be submitted to the HELCOM EC for consideration at its meeting in October 1993.
4. The Steering Group recommends that the ICES Benthos Ecology Working Group should be approached to give advice on improving the benthos part of the BMP in view of their experience from the International North Sea Benthos Survey. A BMP contact person and a laboratory for zoobenthos issues should be suggested by our Steering Group for HELCOM EC consideration.
5. The Steering Group recommends that the HELCOM *ad hoc* Working Group on Coastal Monitoring should consider the value and possibilities of introducing fish community structure and phytobenthic plant and animal community studies as mandatory parameters.

Quality assurance for individual parameters

6. The Steering Group recommends that two

ICES/HELCOM Workshops, one for pelagic parameters and one for zoobenthos, should be arranged by the contact laboratories in 1994. One aim of the Workshops should be to provide a forum for the exchange of information, views and experience on the potentialities and limitations of current methodology. A second aim should be to outline and decide on parameters and methods to be included in an intercomparison/intercalibration exercise to be executed in 1995.

7. The Steering Group recommends that two ICES-HELCOM intercomparison/intercalibration exercises, one for pelagic parameters and one for zoobenthos, should be organized for 1995. It should be the task of the contact laboratories in the two fields to be responsible for the arrangements.
8. The Steering Group recommends that it be mandatory for representatives from all Contracting Parties to the Helsinki Convention to participate in the Workshops and in the intercomparison/intercalibration exercises.
9. The Steering Group recommends that HELCOM financially support the QA activities to ensure that all of its Contracting Parties can participate in the mandatory exercises.
10. The Steering Group recommends that, following the completion of the intercomparison/intercalibration exercises, a revision of the BMP Guidelines, (including a chapter on QA for each biological parameter), should be drafted for submission to the HELCOM EC before the end of 1995. It shall be the duty of the Steering Group to draft the QA chapters.

List of Activities for the Group

Laboratory procedures to achieve internal quality assurance

1. The Steering Group recommends that a questionnaire on laboratory procedures be distributed among all participating laboratories. It should be mandatory to reply to this questionnaire.
2. The Steering Group recommends that its Chairman modify the QUASIMEME questionnaire such that it is also applicable for biological measurements. The Chairman of the Steering Group should serve as the contact person for receiving the replies to the questionnaire.

3. The Steering Group recommends that an evaluation of the responses to the questionnaire be carried out within the group itself.
4. The Steering Group recommends that internal manuals for laboratory procedures be completed by the end of 1995.
5. As a number of relevant working groups will meet in the near future, it was decided that the Chairman should inform them about these recommendations at the first possible convenience.

13 CLOSING OF THE MEETING

The draft report of the meeting was adopted. The Chairman thanked the participants for a very constructive meeting, the Rapporteur for his assistance, and the local organizers from the Sea Fisheries Institute and the Institute of Meteorology and Water Management for providing excellent facilities and service for the meeting. The meeting was closed at 12.00 hrs on 13 March 1993.

ANNEX 1

STEERING GROUP ON QUALITY ASSURANCE OF BIOLOGICAL MEASUREMENTS IN THE BALTIC SEA

Gdynia, Poland, 16-19 March 1993

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ANNEX 2

STEERING GROUP ON QUALITY ASSURANCE OF BIOLOGICAL MEASUREMENTS IN THE BALTIC SEA

Gdynia, Poland, March 16-19 1993

AGENDA

1. Opening of the meeting.
2. Appointment of rapporteur.
3. Adoption of the agenda.
4. Terms of reference for the group.
5. Identification of BMP laboratories and contact persons for biological measurements.
6. Current QA procedures within these laboratories.
7. Strategy for the development of a QA programme.
8. Identification of parameters to be covered.
9. Outline of a tentative time table.
10. Links to the revision of the Guidelines and to other relevant Working Groups within HELCOM, ICES and BMB.
11. Any other business.
12. Adoption of recommendations.
13. Closing of the meeting.

ANNEX 3

STEERING GROUP ON QUALITY ASSURANCE OF BIOLOGICAL MEASUREMENTS IN THE BALTIC SEA

Gdynia, Poland, 16-19 March 1993

LIST OF CONTACT PERSONS ENGAGED IN NATIONAL MONITORING PROGRAMMES (supplement to the list of official contact persons)

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