

ICES/OSPAR Steering Group on Quality Assurance of Biological Measurements in the Northeast Atlantic

ICES Headquarters

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International Council for the Exploration of the Sea

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1 Opening of Meeting

Jon Davies (Chair) opened the ninth meeting of the Steering Group on Quality Assurance of Biological Measurements in the Northeast Atlantic (SGQAE) at 10.30 hrs on 22 February 2005, and welcomed the participants, and particularly Jacqueline Eggleton (UK) and Friedrich Nast (Germany) as new members. A list of participants is included at Annex 1.

Membership of the group has declined in recent years and the range of competencies now available to the group is compromising its ability to achieve all the Terms of Reference assigned to it. ICES/OSPAR should endeavour to increase the membership both in terms of the countries represented, and the range of experience of group members in relation to the Terms of Reference (see Recommendations).

2 Appointment of Rapporteur

Tim Mackie (UK) was appointed as rapporteur.

3 Adoption of Agenda

Agenda was adopted, subject to finalising the timing of the joint sessions with SGQAB (See Annex 2).

4 Review actions from SGQAE 2004 not covered under the agenda

All actions from 2004 had been carried out or would be discussed under the relevant agenda items.

SGQAE expressed its continuing concern over the lack of taxonomic expertise for international monitoring programmes. ICES and OSPAR should take every opportunity to promote initiatives that will increase the availability of taxonomic expertise.

5 Plan for interaction with SGQAB (including reporting procedures)

Chairs of SGQAE and SGQAB agreed an agenda of joint sessions to discuss issues of mutual interest (identified on the agenda). The merge of SGQAE and SGQAB proposed in 2004 to create a single Steering Group responsible for quality assurance of biological measures had not yet been actioned due to procedural formalities. It has now been accepted by the respective Conventions and for 2005 the groups will operate as a single group for matters of joint interest and prepare a single report. Their full merger will be implemented from 2006 when the groups meet as a single group with co-chairs representing OSPAR and HELCOM regions. Discuss the outcome of ICES Annual Science Conference (especially ACME and MHC).

6 Discuss the outcome of ICES Annual Science Conference (especially ACME and MHC)

ICES Scientific Advisor Hans Lassen presented the most relevant themes discussed during ICES Annual Science conference and also introduced the scheme of application of ecosystem approach for ICES advice and assessments. The example of North Sea integrated ecosystem assessment was presented.

ICES are trying to evolve their advisory function – there will no longer be separate reports from ACFM or ACME and ACE will disappear. Instead there will be a single document – ‘ICES Advice’. ACME 2005 will be incorporated into this document. The key change will be a shift to reporting by (eco)region. It is still heavily influenced by fisheries advice.

Two Working Groups will develop the ICES approach to ecosystem assessment: WGRES will write descriptions of ecosystems (for managers), identifying key factors that influence/drive ecosystems and the Regional Ecosystem Study Group for the North Sea (REGNS) that will co-ordinate data collection for an ecosystem assessment. There will be a ‘proof of concept’ workshop on ecosystem assessment at ICES, early May 2005. It will be followed by a Theme Session at ASC 2006.

This shift towards ecosystem assessment will have important implications for SGQAE/SGQAB. They will need to consider the QA issues for the entire assessment process from data collection through to reporting. This will be an important work area in the coming years.

7 Review relevant biological studies and related QA activities in member countries

UK

The NMBAQC/BEQUALM scheme had completed another year adhering to the established format of circulations (2 25 specimen Ringtests, 1 macrobenthic exercise, 3 pre-identified, randomly selected participant generated samples, a 25 specimen reference collection validation exercise and 2 PSA ringtests). This year, there is no participation from Non-UK laboratories as the single participating German laboratory has withdrawn from the scheme. Membership comprises 13 government laboratories and 10 contractors, each participating at the appropriate level. The scheme also receives support from the UK Government’s conservation agencies, who are represented on the management committee.

The scheme (assisted by the UK Water Framework Directive Fish Task Team) also ran a workshop in November in 2004, targeting fish from transitional waters.

Jacqueline Eggleton (UK) advised the group of an EU programme called MARBEF (Marine Biodiversity and Ecosystem functioning). See <http://www.marbef.org/> and Annex 3. CEFAS (UK) are responsible for a work package on Quality Assurance. The MARBEF project aims to provide a QA framework, be a web-based source of standards and guidelines for the conduct of marine biodiversity studies and associated activities including the application of findings in an environmental management context.

Netherlands

The phytoplankton standard procedure CEN/TC 230 N 0499 “Water quality – Guidance standard for the routine analysis of phytoplankton abundance and composition using inverted microscopy (Utermöhl technique) (I 00230207)” is now in a final stage (pending Approval).

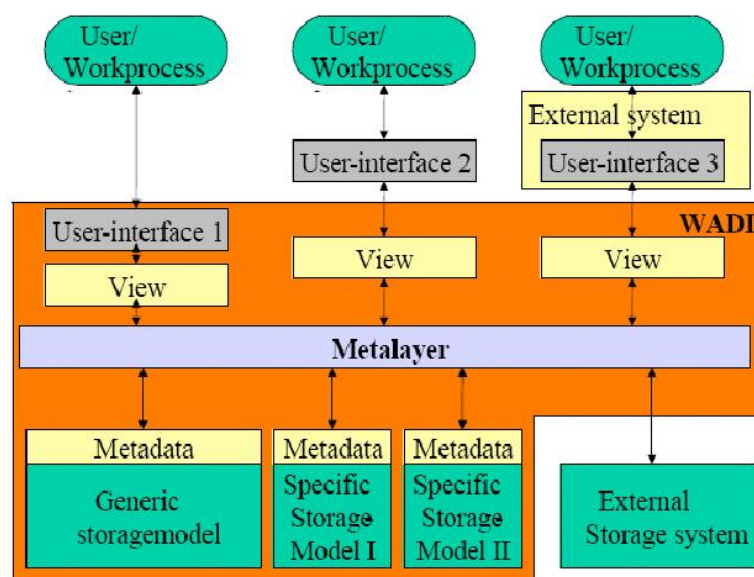
Problems with taxonomy, as presented on previous meetings, is an ongoing story. By looking at previous data sets an improvement of about 60% similarity was achieved using distinctive taxa and aggregating others reducing the data set from ~700 taxa to ~150. The taxa reduction is partly due to the fact that in the beginning of the monitoring several species were not part of the monitoring programme. The improved dataset will be used to provide ecological assessments and assess the impact in the decrease in resolution.

The Dutch national database (Donar) is planned to be replaced by a new infrastructure to manage the so called wet data. Data migration will happen this year to WADI (Water Data Infra-

structure; <http://www.wadi.nl>), an Oracle based data base with exchange by XML and RDF). It is based on open standards and has a flexible structure in order to store new classes of data (incremental approach). New features are now added to store information about accuracy of data Figure 1.

The user-interface is the user's access to the data. In the final situation many user-interfaces (web browser) to WADI will exist. Every user-interface supports a certain user group or a certain workflow. The view layers serve as a neutral access layer to ensure that data can be interacted with from a range of technologies, languages or methods.

Figure 1 The WADI architecture.



WADI uses a new coding system for biota called TCN (Taxon Code Netherlands). At the moment there is no full match with the ITIS codes for biota. BODC presented last year in Hamburg at the OBI conference ("A semantic modelling approach to biological parameter interoperability") a match of 75% (via European Register of Marine Species (ERMS)) of biota data to ITIS with the Dutch TCN.

Sweden

Lars Edler gave comments to CEN on the Phytoplankton standard. Lars Edler's laboratory has gained accreditation for phytoplankton analysis from SWEDAC, covering all steps from collection to recording on the data base – one of the few labs in Europe to have achieved this.

Norway

Kari Nygaard gave the group an update of the national activity in Norway:

ISO-standard on soft bottom fauna out for a final vote (6 January till 6 March 2005). It is expected to be accepted and if so it will be a CEN-standard and a national standard for EU and EFTA.

CEN-standard for sampling of rocky shore macro flora and fauna: earlier accepted as work item in CEN and is based on the Norwegian national standard. This will be on the agenda at the CEN meeting in May 2005 on request from Germany.

Norwegian national standard for monitoring of phytoplankton has been submitted to CEN for discussion in May 2005 – it covers all activities from data collection to input to database.

General information: there is a new international draft standard about use of monitoring data in assessment: ISO standard – work item, (draft on Monitoring design versus value of the data to be used in assessment/decision making): Document ICO/TC147/SC6 N331. 9 Feb 2005.

Water quality sampling. Draft to accompany new work item proposal: ISO/WD5667-20 Water quality sampling – part 20: Guidance on the use of sampling data for decision making (see doc. ISO/TC147/SC6 N332). Note that comments are required by 9 May 2005.

Germany

Petra Schilling and Friedrich Nast provided short papers describing relevant activities in Germany (see Annex 4).

8 Links with ISO/CEN

International standards organizations are now developing standards for marine monitoring and assessment. EC WFD states that monitoring and assessment should be undertaken using relevant International standards or National standards where International standards do not exist. This requirement has prompted the standards organisations to develop relevant standards. In 2003, SGQAE/SGQAB expressed their concern that ICES had no link with these organisations and the groups tried to establish contact with the chairs of the relevant standards committees. However, the Chairs of SGQAE/SGQAB had been reprimanded for trying to contact ISO/CEN directly without going through their parent ICES committees.

Petra Schilling gave a short presentation on the organisation of ISO and CEN committees relevant to marine standards (Annex 5). She informed the group that both organisations had now established marine committees to develop standards. It is important that these Committees are made aware of the work undertaken by ICES and the Conventions in recent years. There are two options for establishing such contact: firstly SGQAE/SGQAB members should contact their national representatives on these ISO/CEN committees to ensure relevant documents are circulated for comment. Secondly, ICES should make formal contact with both organisations to offer its expertise and experience in helping to develop and comment on standards; a copy of a letter prepared by SGQAE/SGQAB in 2003 is attached as Annex 6. (See recommendations)

SGQAE & SGQAB have both contributed to the production of ISO/CEN standards in the past. It is therefore appropriate that a list of existing and developing standards is compiled and drawn to the attention of group members so they can seek comment from the appropriate individuals. ICES should advise OSPAR/HELCOM of these standards to ensure they are used in their monitoring programmes. Petra Schilling kindly prepared a list of current and emerging standards (see Annex 7). ICES should forward this list to BEWG, WGPE, WGZE and WGECO for their information. (See recommendations)

9 Evaluate and report on the outcome of relevant workshops/intercalibration exercises/ring tests, and document future events, including progress with the implementation of phase II of the BEQUALM scheme;

Lars Edler gave an overview of a Danish phytoplankton intercalibration exercise, which included some participation from Sweden and Norway as well. Participants were asked to use the method described in the Danish Technical Advice for Marine Monitoring, which is broadly comparable to the methods used in the other countries. The sample was from late summer 2004 in the Kattegat. There was good agreement on the Phytoplankton Carbon Biomass (CV 12%). As expected the largest difference in Cell Densities occurred among the most rare species. The difference in Cell Volumes for specific species was clearly due to the different ways

the biovolume was calculated. Some participants used tabled values, whereas others actually measured cells. The difference in settled sample volume was thought to be the cause of some of the differences obtained. The HELCOM counting software PHYTOWIN was not used as it is not operational in full range yet.

Primary Production

Nothing has happened since the reporting of the results of the questionnaire in 2004. WGPE are planning a meeting in Bergen in 2007 (to be discussed by the group in a meeting in Germany next month) to review QA matters. There are very few laboratories measuring primary productivity (they are predominately Swedish)

There is no ICES reporting format for the incubator method: this should have been initiated by HELCOM or MONAS. MONAS indicated that measurement of Primary production should not be reduced further. (See Recommendations)

Dr. Petra Schilling gave the overview of 4th German marine monitoring programme (GMMP) macrozoobenthos ring test. The summary of the presentation is attached as Annex 8. The ring test has been finished successfully with support of numerous external experts in 2004. 16 laboratories of the GMMP took part in this ring test. They had to determinate and count 22 selected macrozoobenthos species of the GMMP-area. The aim was to check the taxonomical expertise and the precision of sorting and counting of these laboratories. In future information about comparison of macrozoobenthos data should be received, problems in determining special groups of macrozoobenthos organisms should be stressed and the statistical methods should be improved.

Anda Ikauniece presented the outcome of Baltic Sea mesozooplankton ring test organized by Institute of Aquatic Ecology, Latvia. 10 participants were from 7 institutions of Germany, Lithuania and Latvia, but only 3 laboratories are involved in HELCOM monitoring programme. The objective of this ring-test was to assess the possible variance of participants' identification skills and accuracy of counting. The main conclusions were that procedure of analysis should have strict definition in order to get the comparable results and that taxonomic workshop on Baltic Sea copepod species would be helpful in future species identification.

Regarding similar planned activities, Dr. Georg Martin informed that for phytobenthos three training courses will be held in Baltic Sea area in April-June this year, two in Germany and one in Estonia. Information of the workshops in Germany is attached as Annex 9.

SGQAE/SGQAB expressed concern that there is no requirement for international ring tests within the Conventions. This creates a potential problem in trying to compare the results between countries during international assessments (such as JAMP).

It is important to re-emphasise the need for labs to participate in QA schemes within each Contracting Party, and the Conventions should be aware of the potential problems of lack of comparable data for area-wide assessments.

BEQUALM – continues in same format as UK's NMBAQC scheme although it has received very little direction from the BEQUALM secretariat. The Scheme will run workshops every year: in 2004 it concentrated on Coastal Fish in view of their inclusion within the WFD. There may be a ring test on juvenile fish and a photographic ring test on fish. There are no participants outside of the UK at present. A German institute participated in 2004 but encountered difficulties due to regional differences in fauna and their lab did not have the appropriate experience/literature to identify UK fauna. This highlights the difficulty in trying to operate an international ring test with little financial support.

SGQAE expressed concern over the promotion of the BEQUALM scheme at an international level and yet there is no support for the UK's NMBQAC group to enable it to extend to sup-

port international laboratories. At present, labs in other Contracting Parties who are submitting data to OSPAR are not in BEQUALM and therefore it is not possible to assess their QA performance. This will affect the quality assurance of the data. SGQAE/SGQAB recommend that OSPAR/ICES highlight the lack of international participation in BEQUALM, and how that will affect an assessment of the QA of data for international assessments. (See recommendations).

Petra Schilling compiled a list of proposed ring tests and intercalibration exercises and other planned QA activities, reported by all participants of SGQAB/SGQAE - Annex 10.

10 Review and report on outcomes and developments of coastal fish monitoring guidelines.

Sweden is appointed as lead country in revising the coastal fish monitoring

programme within HELCOM. Two recent workshops on coastal fish monitoring in 2004 and 2005 have been organized. The intentional goal is to increase standardisation of used methods, and also to revise sampling methods according to new knowledge. In Sweden an alternative approach is developed in multi-mesh gillnet fishing, based on stratified, random sampling. However, at the two HELCOM workshops, the difficulties have shown up in using one single method for coastal fish monitoring. Primarily because the coastal habitat differs considerably between participating countries. But also due to that a larger part of the

coastal fish community is necessary to cover, i.e. both benthic-demersal species, as well as the small-sized species in the upper-most littoral zone. Therefore current approach is to find out a set of suitable methods to be used in different habitats, and to focus the work on harmonization of Ecological Quality Objectives, derived from the sampling methods used. The group is going to revise the list of threatened species list in the Baltic Sea area. Their work will be a part of HELCOM thematic assessment.

Full set of coastal fish monitoring related documents is available at www.helcom.fi under Meeting documents and MONAS.

In OSPAR area the data on non target species is gathered only occasionally as by-product along regular commercial fish stock assessment. Some single studies exist but generally the information is lacking.

Meeting asked ICES to look for the knowledge in any existing WG on advise on QA of coastal fish monitoring.

11 Review QA issues arising from discussions within ICES Working Groups. (Especially the ICES/HELCOM SGQAB and the ICES/HELCOM SGQAC)

SGQAE/SGQAB had not received any material from other working groups to consider.

12 Review progress in the development and use of the ICES Biological Community Database

ICES Data manager Marillyn Sørensen gave the presentation about the development of reporting formats of biological data (Annex 11). Reporting formats for phytobenthos have been tested also and now the formats are available and should be used. Data screening is the next relevant topic; 2005 will be used to prepare the screening mechanisms. Conversion programs are prepared to convert between old and new formats. In 2006 biological community database will be finished. ICES is requesting now the working groups to provide specifications for

screening programs and data products. It is planned to collect the specifications and post on the ICES web page. SGQAB/SGQAE was invited to help on preparation of the lists of specifications and data products. During discussion it was decided that the set of questions will be formulated and directed through national representatives to experts. Some specifications regarding the HELCOM data were already produced with a help of ICES data centre and the document is attached as Annex 12.

A serious concern was expressed on existing formats and especially species codes. There are examples that some countries are not able to submit data because large number of species are not covered by codes. The cooperation with ITIS has not resulted in any solution of the problem as ITIS contacts mostly do not respond. The problem is not solved even when ICES has allowed to submit lists in any coding as long the code is referred and provided because the merging of different codes and lists can cause great problems in the database.

Lack of motivation of submitting data to ICES database is a serious problem, as the submitted biological community data have to wait several years to be checked. If any feedback is missing, laboratories are hard to convince to submit the next set of data. Meeting expressed its concern that the deadline for biological community database has been changed again and decided to ask ICES not to extend it anymore (See Recommendations).

SGQAE expressed its concern over the development of a large centralized database that will hold a copy of national monitoring data. If these data are modified at a national level, the central copy will be out of date. SGQAE suggested that ICES consider using a more distributed approach by creating a portal to linking to National Databases – the OBIS (see <http://www.iobis.org>) and GBIF initiatives were given as examples of such a system. (See recommendations)

Group discussed also the vitality of such common central database against set of national databases connected into networks. Data should be possible to track back to the source what is almost impossible in a central database. Large copy database is also quite hard to keep updated if data are corrected on a later stage. (See recommendations)

13 Finalise the guidelines for biological sampling and analytical practices required by CEMP and EcoQO monitoring programmes;

SGQAE had received very little guidance from OSPAR on this agenda item. It was unclear as to which guidelines should be considered. SGQAE discussed the text on the *Application of AQC Criteria* prepared by SGQAE in 2003 and 2004 (Annex 8, SGQAE 2004). To make this document applicable to OSPAR EcoQOs, it requires additional information on plankton sampling.

SGQAE 2003 made an informal request to the Chairs of WGPE and WGZE to comment on this document at their meetings in 2003/4. Unfortunately these groups were not able to undertake this action. Comments and additional text would be welcome from these groups. Furthermore, it would be useful if WGSAM and SGQAB/MONAS could also consider the text.

SGQAE recommends that ICES requests these working groups to consider the draft text at their meetings in 2005/6 and provide comments to the Chairs of SGQAE and SGQAB before the 2006 meeting (see Annex 11, recommendation 5 for SGQAE 2004). If such comments are received, the text will be finalised at SGQAE 2006 and then made available for use by the wider ICES/OSPAR community.

SGQAE discussed the present text and noted it required some modification. In particular:

- It must be clearly stated that this document is only applicable where international standards are not available.
- These guidelines only consider the QA process to laboratory analysis and not in the use of that data in the assessment process.
- It does not fully address sampling of phytobenthos or hard bottom zoobenthos
- It does not cover the recording of appropriate metadata on QA, that are vital to the interpretation of data

Minor modifications were made to the text and an updated version is presented in Annex 13. This should be circulated as set out in the recommendations.

SGQAE will review comments from ICES and OSPAR at the 2006 meeting with a view to finalising these guidelines.

14 Review and evaluate the status of implementation and the practical use of OSPAR/ICES quality assurance guidelines in marine monitoring and assessment programmes in the OSPAR/ICES/HELCOM area and provide guidance for future assessment programmes;

SGQAE reviewed the JAMP guidelines documents (97-04e, 97-05e and 97-06e) to assess their suitability in the current climate. It is important to note that SGQAE's main competence is in the fields of macro-zoobenthos and phytoplankton, and it is not able to offer advice in relation to other topics addressed in the JAMP. QA of chemical measurements should be addressed by SGQAC.

SGQAE reviewed the text and assessed whether the current documents merit their present Category I or II status. It found that all documents were seriously out of date and did not reflect current good practise or international standards. Therefore SGQAE recommends that OSPAR downgrades their status and takes appropriate measures to review these guidelines to ensure they meet current standards. (See recommendations).

Specific comments were:

- 97-06e: too general, needs to take into account ISO/CEN standards, recommend splitting into 2 documents (soft & rocky). It should consider intertidal areas. Recommend major revision.
- 97-05e: needs major revision,
- 97-04e: needs major revision.
- ICES TIMES32 (Assumed to be *JAMP guidelines on Quality Assurance for biological monitoring in the OSPAR area*): minor tweaks required then consider upgrade to Category II or even Category I.

More detailed comments are listed in Annex 14. If these documents are revised, SGQAE will review their content and offer advice on their status in 2006.

SGQAE considered how it might review the use and practical implantation of guidelines by OSPAR Contracting Parties. Two options were considered appropriate:

- Determine whether the data submissions to ICES include any information on the use of guidelines and/or QA procedures.
Unfortunately there are too few biological data in the ICES database to assess the use of QA guidelines.
- A direct approach to laboratories in Contracting Parties whose data will be used in OSPAR assessments.

SGQAE suggests that OSPAR ask its Contracting Parties to contact those laboratories who contribute data to their national monitoring programme to provide information on their use of relevant QA guidance. SGQAE have drafted a questionnaire for collecting the relevant infor-

mation (Annex 15). If OSPAR collects and collates such information, SGQAE will review the results and provide advice on the application of guidelines and protocols at its meeting in 2006. (See recommendations)

15 Develop guidelines for quality assurance for monitoring of EcoQOs;

SGQAE received the following guidance on this agenda item from the OSPAR Secretariat:

The terms of reference on this item ask SGQAE to develop guidelines for quality assurance for monitoring of EcoQOs. As a first step it would be good if SGQAE develop an overview of the availability of QA for the EcoQOs for instance they could review the documents on EcoQOs to see where QA has been documented, if not it would be helpful if they could identify what should be documented and if there is nothing develop guidelines for the inclusion of QA information.

In 2004 SGQAE formulated some advice on QA considerations when developing indicators (including EcoQOs). The SGQAE 2004 report states:

SGQAE recommends that ICES send Annex10 to OSPAR for distribution to groups drafting EcoQOs, requesting feedback on its content and suitability for discussion in 2005 (Recommendation 13, Annex 11).

No feedback was received and therefore SGQAE wishes to restate this recommendation with a view to discussing the information in 2006 (See Recommendations).

SGQAE reviewed the documents on EcoQOs provided by the OSPAR Secretariat and noted that they offer no information on the QA issues associated with the derivation, monitoring or assessment of EcoQOs. All comments relating to the EcoQOs relevant to SGQAE refer to the use of existing monitoring programmes and their assumed compliance with the QA requirements of the JAMP. The group provides comments on the current JAMP measurements (see section 14). Furthermore, it is assumed that the current monitoring programmes will provide appropriate data to assess the proposed EcoQOs. SGQAE have significant concerns over the use of data from one programme (designed to meet a specific objective) being used to underpin the assessment of another objective by default. Such an assumption on the transference of data may only be met if fully tested: SGQAE04 proposed a series of questions that should be considered when planning the use of an indicator. The applicability for data from one programme to meet the requirements of a second programme must be fully assessed, considering these questions, before such data can be used in the second programme. SGQAE expresses its concern that such an assessment has not been undertaken for the proposed EcoQOs in relation to the use of existing monitoring data for their calculation and assessment.

SGQAE suggests that OSPAR asks the groups developing EcoQOs to provide information on how they plan to address QA matters. It should draw the existing guidance (JAMP etc) to these groups attention. If OSPAR then provides the proposed QA plans to SGQAE, it will offer advice on their suitability and provide guidance where necessary at its 2006 meeting. (See recommendation).

SGQAE noted that there are many existing guidelines for data collection and laboratory analysis for data that will be used for the calculation of EcoQOs (noting that the JAMP guidelines require substantial revision – see section 14). For SGQAE/SGQAB to further develop guidelines in relation to EcoQOs, they require more specific information from OSPAR on the aspects that require such guidance.

SGQAE/SGQAB discussed the availability of suitable data (beyond the ICES database) and expressed concern over the comparability of data between contracting parties in the absence of

any intercalibration exercises at an international or regional level. QA on the final assessment of the compliance with an EcoQO is absolutely dependent on the quality of the data provided by the contracting parties, and its comparability across the OSPAR region. Until OSPAR properly ensures that all data provided by contracting parties are collected and analysed in a QA manner, based on compliance with established guidelines, and appropriate intercalibration has been undertaken between contracting parties to verify the comparability of data, it will not be possible for OSPAR to assess compliance with an EcoQO with any degree of QA.

SGQAE noted that the proposed EcoQO should be aligned with the WFD as far as possible to ensure a consistent approach is taken in the sampling and assessment. OSPAR should contribute their experience to WFD work to help this harmonisations process. (See recommendations)

SGQAE considered the data requirements for those EcoQOs that do not form part of current national monitoring programmes – for example those related to rare and threatened habitats and species. It was not apparent where OSPAR would source data for their assessments and whether these data would have appropriate QA. It is likely that it will be necessary to mine data from research and survey programmes, in addition to using data recorded by other monitoring programmes. SGQAE had significant concerns both with sampling and in the assessment of EcoQO's as the data are likely to be derived from monitoring programmes that are not within National programmes and often lacking appropriate QA. To ensure these data have appropriate QA, ICES/OSPAR should promote the use of their QA guidance to the EC and National Research Bodies, requesting that research and survey programmes use this guidance to improve the QA of all data generated. To further improve the availability of data, contracting parties should require organisations undertaking EIAs to comply with existing national and International standards. (See recommendations).

16 Review the progress with, and offer further advice on the development of QA of biological measurements in relation to OSPAR JAMP products

To date, SGQAE (and SGQAB) have concentrated on establishing QA guidelines for data collection and laboratory analysis. It is not clear how the group are expected to contribute to the QA aspects of planned OSPAR assessments. In particular, SGQAE are not presently involved with any of the assessment products under Theme B: Biological Diversity and Ecosystems – for example BA-3.

SGQAE expressed general concern that the low rate of data submission to ICES will compromise any OSPAR assessment. In particular, it may be necessary to source additional data from contracting parties to provide sufficient information to complete the planned assessments. It may be difficult to assess the quality assurance and quality control procedures applied to such additional data, particularly where it does not form part of national monitoring programmes. For example, it may be necessary to source data from research and survey programmes to assess the distribution of OSPAR Habitats and Species. Where such data are collected by laboratories who participate in national QA schemes, their research and survey data will most likely meet appropriate standards. For other organisations, such an assessment of quality may be more difficult to ascertain. SGQAE suggest that OSPAR (SIME/ASMO) considers how it will source data for their planned assessments, particularly those listed in the JAMP under Theme B, and how it plans to assess the QA status of such data. SGQAE, in conjunction with ICES working groups, would be able to develop guidance on assessing the quality and potential use of research and survey data if requested. In order to develop such guidance, it would require more detailed information on the planned assessment procedure in terms of the type of data expected and the statistical procedures to be applied.

SGQAE requests more specific information from OSPAR on its expected role in the JAMP assessments. When such information is available, the group will be able to offer more detailed guidance on QA matters. (See Recommendations).

17 Review the quality assurance measures being adopted in the marine monitoring and assessment aspects of the EC Water Framework Directive

Kari Nygard gave a brief overview of the current status with the implementation of the EC Water Framework Directive (WFD). She advised the group that there will be many developments in relation to marine monitoring and assessment over the next two years.

Intercalibration and Classification: NEA-GIG (Geographic Intercalibration Group), originally existed as the COAST Group, is now divided into 3 geographical regions, North East Atlantic (NEA), Baltic and the Mediterranean (including the Black Sea). There are two geographical intercalibration groups relevant for HELCOM and OSPAR: North East Atlantic GIG and the Baltic GIG. The GIGs develop classification systems and biological indices for the biological elements to be reported under the WFD. The Inter-calibration work will compare the assessment systems used in each member state and develop a common understanding of environmental quality.

The web address for intercalibration activities under WFD is: <http://ies.jrc.cec.eu.int/eevac/>

Members of SGQAB/SGQAE were asked: What are consequences to your national monitoring from the implementation of the WFD? SGQAE/SGQAB members who had knowledge of the WFD in their countries provided the following information:

Norway: expect that most existing coastal monitoring will be modified to meet the requirements of the WFD. Monitoring implications for Norway is about 100,000 km² of coastal waters linked to WFD. Offshore monitoring is dominated by fisheries and oil/gas interests, however, if the marine strategy is implemented then there may be a WFD role here too.

Sweden: EPA has an advisory group to develop indicators and protocols for assessment. Indicators are now well developed. It is not yet clear how the coastal monitoring for WFD will be harmonised with HELCOM monitoring offshore.

Germany: monitoring programme is under review to assess how it will contribute to the WFD requirements. Germany has completed the typology and are in discussions with neighbours to develop intercalibration for international water bodies. It may result in more effort re-directed towards biological monitoring in the North Sea.

Netherlands: monitoring programme being evaluated against the requirement of the WFD. Some stations maybe moved to collect additional data in the 1nm zone. Classification tools are in final stages of development – they are closely linked, where possible, to the OSPAR Eco-QOs.

HELCOM: A group (MONPRO) are addressing monitoring issues in relation to the WFD. it will not become involved in coastal monitoring and continue to concentrate on offshore (open) waters. HELCOM assessment timetable will be modified to fit the WFD timetable.

Latvia: most effort is focussed on freshwater monitoring. There have been some institutional changes to support the WFD.

Estonia: adapting existing monitoring and assessment programme to fit with WFD requirements. This will require new stations in coastal areas and new parameters added to existing stations. There is a draft proposal for the classification system.

Lithuania: typology and classification for WFD is being developed and information will come from the national monitoring programmes.

EC ECOSTAT group will release WFD guidance on monitoring later this year and therefore it is important that the marine conventions contribute to this process. OSPAR/HELCOM should ensure its monitoring guidance is drawn to the attention of ECOSTAT. It is important that ECOSTAT take account of the QA guidance on marine monitoring and assessment developed by ICES/OSPAR/HELCOM. (See recommendations).

SGQAE/SGQAB briefly reviewed the development of indicators for assessing biological quality. The development of classification tools for the WFD has dominated work on this theme. The NE-GIG is developing classification tools (biological indices) for the entire NE Atlantic area. The CHARM project in the Baltic has considered indicators for macrophytobenthos and zoobenthos – a report is imminent (http://www2.dmu.dk/1_Viden/2_Miljoe-tilstand/3_vand/4_Charm/charm_main.htm). The results will be considered by the Baltic GIG in due course. Since most data for the classification process will be derived from the National Monitoring Programmes, appropriate QA measures will be applied.

OSPAR and HELCOM are developing EcoQOs independent of the WFD work. Netherlands are trying to align their WFD phytoplankton classification tools with the proposed OSPAR EcoQOs for Phytoplankton. It would appear that the National Monitoring data will underpin the assessment of compliance with EcoQOs and therefore these data will be quality assured.

Since the same data will probably be used for EcoQOs and the WFD, it will be important that there is good communication between the Conventions and the EC to ensure the conclusions are comparable. (See recommendations).

In conclusion, it is important to note that WFD reporting is mandatory for Member States, whereas reporting under the conventions it is voluntary. OSPAR/HELCOM should note that National Monitoring Programmes will be adapted to suit the requirements of the WFD and some changes may result in existing stations/time series being lost. It is vital that ICES/OSPAR/HELCOM are proactive in seeking collaboration with the groups implementing the WFD (See recommendations).

18 Date/venue for next Steering Group meeting

14-16 February 2006, ICES Headquarters, Copenhagen

The proposed TOR for 2006 are included at Annex 16.

19 Any other business

There was no further business.

20 Close of meeting

SGQAE and SGQAB reviewed the draft reports and endorsed the list of recommendations to ICES and OSPAR Secretariats (Annex 17).

Jon Davies thanked all members of SGQAE and SGQAB for their contribution to a successful meeting in 2005. The groups expressed their thanks to ICES for hosting the meeting. The meeting was closed at 1100, 25 February, 2005.

Annex 1: List of participants for SGQAE

NAME	ADDRESS	PHONE/FAX	EMAIL
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Annex 2: Agenda for SGQAE 2005

Item No.	Joint SGQAE/S QUAB	Agenda item
1		Opening of meeting.
2		Appointment of Rapporteur.
3		Adoption of Agenda.
4		Review actions from SGQAE 2004 not covered under the agenda.
5	Y	Plan for interaction with SGQAB (including reporting procedures).
6	Y	Discuss the outcome of ICES Annual Science Conference (especially ACME and MHC).
7		Review relevant biological studies and related QA activities in member countries.
8	Y	Links with ISO/CEN
9		Evaluate and report on the outcome of relevant workshops/intercalibration exercises/ring tests, and document future events, including progress with the implementation of phase II of the BEQUALM scheme;
10	Y	Review and report on outcomes and developments of coastal fish monitoring guidelines.
11	Y	Review QA issues arising from discussions within ICES Working Groups. (Especially the ICES/HELCOM SGQAB and the ICES/HELCOM SGQAC
12	Y	Review progress in the development and use of the ICES Biological Community Database.
13		Finalise the guidelines for biological sampling and analytical practices required by CEMP and EcoQO monitoring programmes;
14		Review and evaluate the status of implementation and the practical use of OSPAR/ICES quality assurance guidelines in marine monitoring and assessment programmes in the OSPAR/ICES/HELCOM area and provide guidance for future assessment programmes;
15		Develop guidelines for quality assurance for monitoring of EcoQOs;
16		Review the progress with, and offer further advice on the development of QA of biological measurements in relation to OSPAR JAMP products,
17	Y?	Review the quality assurance measures being adopted in the marine monitoring and assessment aspects of the EC Water Framework Directive
18		Date/venue for next Steering Group meeting.
19		Any other business.

Annex 3: MARBEF

CEFAS is responsible for the Quality Assurance work package of an EU programme called MARBEF (Marine Biodiversity and Ecosystem functioning)

See <http://www.marbef.org/>

Deliverables

D1.1: MARBEF QA framework (R; PU; month 12)

D1.2: Web-based source of standards and guidelines for the conduct of marine biodiversity studies, and associated activities including the application of findings in an environmental management context (RE; PP; month 12, O; PU; month 15)

D1.3: Production of guidelines governing the application by the wider marine science community of new

end-products developed under MARBEF (timing depends on progress in other WPs; new guidelines will be included in the final web-based package: (RE; PP; month 12, O; PU; month 18)

Milestones

M1.1: Communicate with relevant national/international organisations outlining the QA goals of MARBEF with a view to future collaboration (month 4 for initiation of formal contacts with established agencies; then ongoing communication throughout project)

M1.2: Produce a draft QA framework for MARBEF activity for consultation (month 8)

M1.3: Set up a QA meta-database (month 9)

M1.4: Finalise QA framework for MARBEF activity following consultation (month 12)

M1.5: Identify guidelines/standards relevant to MARBEF activity; determine accessibility; where necessary, initiate translation to English as a common language; identify gaps in coverage (month 12)

M1.6: Act as co-ordinator and arbiter for QA products under MARBEF to ensure consistency and compatibility with the wider needs of marine scientists and environmental managers (ongoing throughout project)

Annex 4: Quality Assurance (QA) Panel of the German Marine Monitoring Programme of the North and Baltic Sea (GMMP) of the German Federal Environmental Agency (WG Biology)

• **QA activities period 2005 – 2006 Last update: 17.02.05**

	theme	status	participants
Ringtests			
<i>Phyto-plankton</i>	Ring test of counting and determination of biomass of cultivated algae	postpone, in preparation for 2005/2006	GMMP-Laboratories*
	Ring test of determination of chlorophyll- <i>a</i>	planned for 2005/2006	GMMP-Laboratories*
<i>Macrozoobenthos</i>	Determination and numeration of macrozoobenthos species of the North Sea and the Baltic Sea in a sediment sample	report available in German, English version is planned to be available in Summer 2005	GMMP-Laboratories
Workshops			
<i>Phyto-plankton</i>	Taxonomical Workshop: Bacillariophyceae	planned for 2005/2006	GMMP-Laboratories*
<i>Macrozoobenthos</i>	Taxonomical Workshop: Mollusca, Oligochaeta, Polychaeta 22.03. – 26.03.2004, Kiel	report in preparation, planned to be available in Summer 2005	GMMP-Laboratories
<i>Macrophyto-benthos</i>	Monitoring methods of macrophyte monitoring in relation to the GMMP and the EG-WFD including exercises for species determination	<u>hard bottom:</u> 11.04. – 15.04.05 Helgoland <u>soft bottom:</u> 20.06. – 24.06.05 Hiddensee	GMMP-Laboratories*
<i>Marine monitoring and Quality Assurance</i>	Workshop Marine Monitoring, Water Framework Directive and Quality Assurance, Joint session of WG Biology and Chemistry 10.05. – 14.05.2004, Isle of Vilm	report available in German	Members of WG Biology and Chemistry, GMMP-Laboratories*

* if there are enough capacities, additional laboratories can take part upon request

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Review of data submissions to ICES in the year 2004

Comments by Germany

In addition to the regular data submissions by Germany, three major tasks dominated the last year:

- the OSPAR/MON Assessment
- the second EUROWATERNET data flow and
- the HELCOM/MONAS submission.

A lot of previous submitted data for contaminants in sediment and biota had to be reworked, mainly due to missing QA information. For this exercise it is recommended to get response from ICES

- which QA information was really used during that assessment, and
- which needed QA information was often missing or poor.

A laborious task was in addition the station allocation to enable trend assessments. Station positions and names varied from year to year for a number of reasons, but for trends, it is essential to know what data belong together. It was recommended that the station identifier indicates a local name so that experts assessing the data can more easily find the sampling site on a map. Thus, local names should be reported also in future in a consistent way.

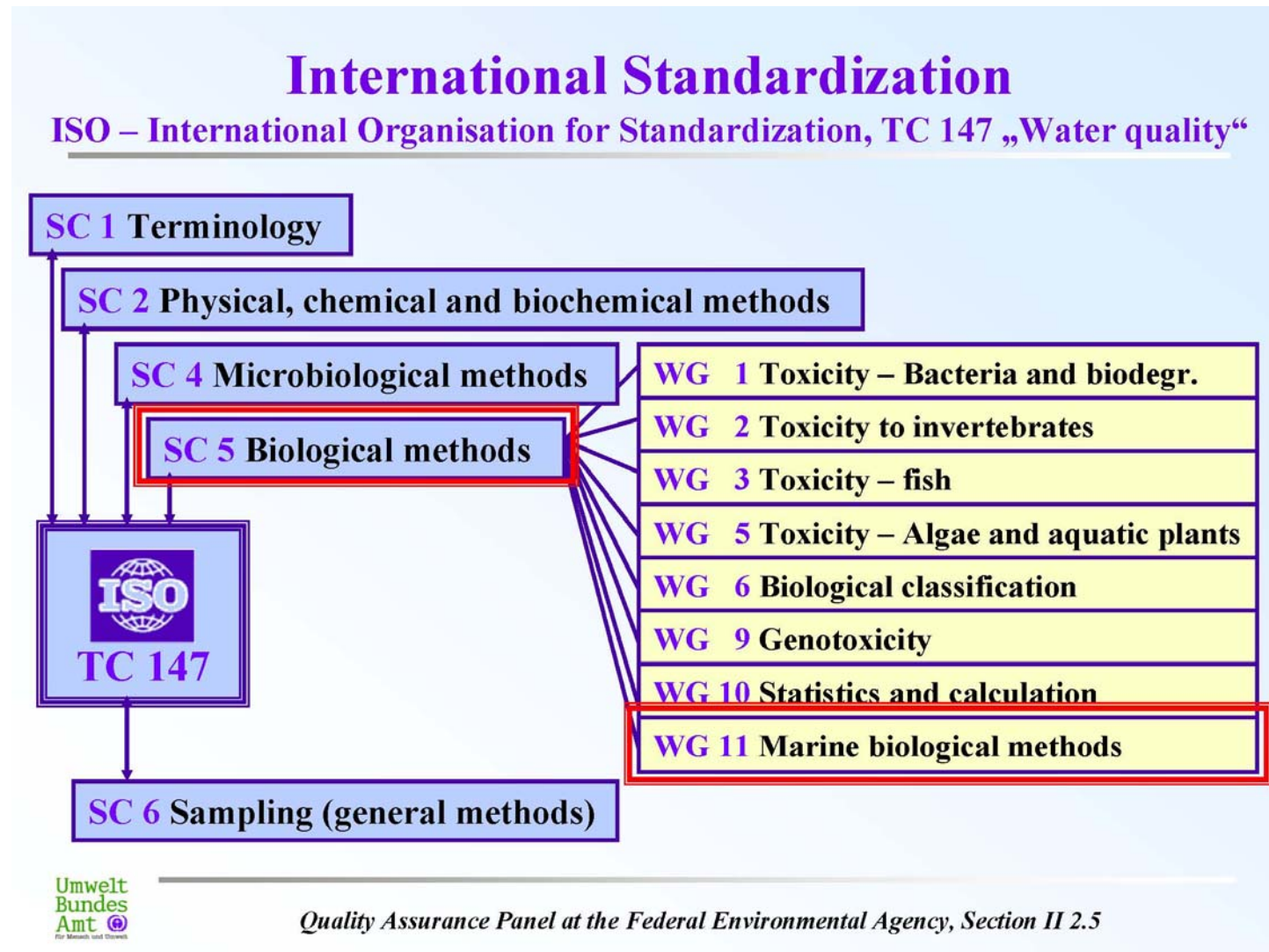
For the second EUROWATERNET data flow, Germany submitted nutrient data to ICES from 2001/2002, i.e. 29 cruises partly covering the whole North Sea, but also including hourly measurements from automatic measuring devices. This data is submitted to ICES and not directly to EUROWATERNET in order to ensure equal quality and homogeneity.

Whereas the afore mentioned submissions were reported in the ICES 3.1 format, a gap in nutrient data coverage for the years 1998 – 2004 was closed by submitting this data in an easy format. In fact QA information for nutrients is reported more rarely by some institutes, and might be omitted. The introduction of Format 3.2 is under discussion, and is foreseen to be adopted this year,

in particular we tested to report benthos data in the format for biological community data. Measuring institutes already report most QS-information with their data. In general we use ITIS as taxonomic code, where no code available users switch to MARBEF for species identification. In format 3.2 the reporting of reference material is mandatory, this is not met by all data originators.

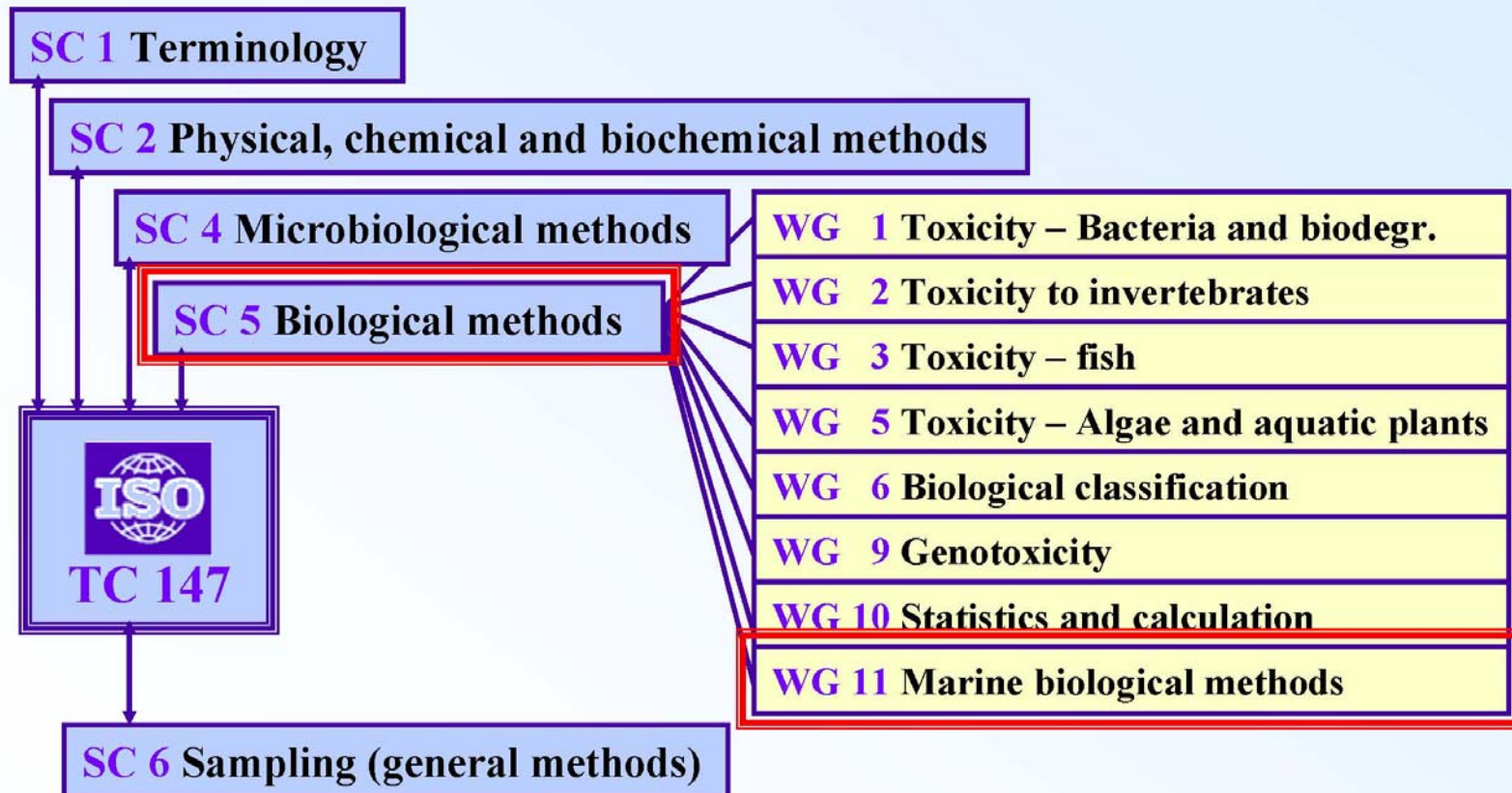
BSH hosted the International Conference on Marine Biodiversity Data Management

in Hamburg, 29 November to 1 December 2004. About 200 participants from 33 countries attended the meeting and covered a broad complex from information, taxon-based to geographical systems. OBIS, the Ocean Biogeographic Information System, was the dominating interface to marine species data from all over the world, as part of the Census of Marine Life. The network's establishment was announced at this conference. The statement and abstracts of the sessions are available in its web site (<http://www.vliz.be/obi/statement.php>). This statement emphasizes the importance of making biodiversity information available, not only to the scientific community, but to the society on the whole by promoting on-line availability of data used in published papers and promoting comprehensive documentation of data, including metadata and information on the quality of the data.

Annex 5:

International Standardization

ISO – International Organisation for Standardization, TC 147 „Water quality“



European Standardization

CEN - Comité Européen de Normalisation, TC 230 „Water analysis“

WG 1 Physical and chemical methods

WG 2 Biological and ecological methods



TG 1 Invertebrates

TG 2 Biological and ecological assessment

TG 3 Macrophytes and algae

TG 4 Fish monitoring

TG 5 Waterbody characteristics

TG 6 Quality assurance

New TG 7 Marine ecological methods

WG3 Microbiological methods

Steps of developement of a Standard



Annex 6: Draft letter to ISO/CEN to seek collaboration with SGQAE/SGQAB

To: Dr Sibylle Schmidt
Chair (ISO TC 147/'Water Quality')
Morsbroicher Str. 40
51375 Leverkusen
Germany

To: Dr U Borchers
Chair (CEN TC 230/'Water Analysis')
c/o Deutsches Institut für Normung e. V. (DIN)
Postfach DE-10772
Berlin
Germany

To: Dr T Smith
Chair (ISO TC 176/'Quality Management and Quality Assurance')
CSA International 5060 Spectrum Way
Suite 100
CA-Mississauga, ON L4W 5N 6.

Dear

At their meetings held in Copenhagen in February 2005, the ICES/HELCOM Steering Group on Quality Assurance of Biological Measurements in the Baltic Sea (SGQAB) and the ICES Steering Group on Quality Assurance of Biological Measurements in the NE Atlantic Area (SGQAE) discussed various matters relating to the QA/AQC needs of marine sampling and analytical practices to meet acceptable standards in national and international monitoring programmes. During the meetings, the Steering Groups reviewed and prepared comments upon a number of draft international standards, including those produced under ISO and CEN auspices, arising from earlier informal contacts with members of the relevant Working Groups. ICES are keen to ensure the experience of the marine science community is utilised in the development of international standards relating to international standards relating to aquatic survey, sampling and assessment.

These comments will be conveyed directly to the chairs of the relevant Working Groups.

I believe it would be to the advantage of our organisations, and of the national governments that support us, if we were to establish an effective working liaison between our respective groups. All three groups have an area of common interest regarding the maintenance and enhancement of the quality of work programmes, especially those involving international collaboration, and the members of SGQAB and SGQAE have considerable experience in this field.

The question of whether adequate provision is presently made for regular reviews of accepted standards or guidelines, so that they are up-dated in a timely way and therefore do not run the risk of rapidly becoming outmoded, is another area where an established line of communication between our respective organisations would be mutually beneficial.

The 2004 reports of the above ICES Steering Groups are available on the ICES website (<http://www.ices.dk>), and the outcome of the 2005 meetings will also shortly be available. The desire of both Steering Groups to foster links with international agencies such as your own is articulated in these reports.

I am writing to you on behalf of the Chairs of SGQAB and SGQAE (Anda Ikauniece and Jon Davies, respectively) who may be contacted directly, but I would appreciate it if I could be kept informed of developments.

I look forward to fruitful cooperation with your organisation on these important topics.

Yours sincerely

David de G. Griffith

General Secretary

cc: Anda Ikauniece, Jon Davies, ...

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Annex 7: International Standards (CEN, ISO) and Guidelines (HELCOM, JAMP) for marine biological parameters (coastal and transitional waters) - overview of existing standards and standards under development (*italic – older standards*)

Quality Assurance

Standards

- ISO 8466-1 (1990, Ed. 1): Water quality - Calibration and evaluation of analytical methods and estimation of performance characteristics - Part 1: Statistical evaluation of the linear calibration function
- ISO 8466-2 (2001, Ed. 2): Water quality - Calibration and evaluation of analytical methods and estimation of performance characteristics - Part 2: Calibration strategy for non-linear second-order calibration functions
- ISO/TR 13530(1997, Ed. 1): Water quality - Guide to analytical quality control for water analysis
- prEN 14996 (under Approval: 2007-02): Water quality - Guidance on assuring the quality of biological and ecological assessments in the aquatic environment

Guidelines

- Manual for Marine Monitoring in the COMBINE Programme of HELCOM, PART B. General Guidelines on quality assurance for monitoring in the Baltic Sea: <http://sea.helcom.fi/Monas/CombineManual2/PartB/BFrame.htm>
- JAMP guidelines on Quality Assurance for biological monitoring in the OSPAR area (ASMO 2002)

Sampling, general

Standards

- ISO 5667-1 (1980, Ed. 1): Water quality - Sampling - Part 1: Guidance on the design of sampling programmes
- EN 25667-1 (1993): Water quality - Sampling - Part 1: Guidance on the design of sampling programmes (ISO 5667-1: 1980)
- prEN ISO 5667-1 (rev., under Development: 2005-01): Water quality - Sampling - Part 1: Guidance on the design of sampling programmes (ISO 5667-1: 1980; EN 25667-1: 1993)
- ISO 5667-2 (1991, Ed. 2): Water quality - Sampling - Part 2: Guidance on sampling techniques
- EN 25667-2 (1993): Water quality - Sampling - Part 2: Guidance on sampling techniques (ISO 5667-2: 1991)
- ISO 5667-3 (2003, Ed. 3): Water quality - Sampling - Part 3: Guidance on the preservation and handling of water samples
- EN ISO 5667-3 (2003): Water quality - Sampling - Part 3: Guidance on the preservation and handling of water samples (ISO 5667-3: 2003)
- ISO 5667-9 (1992, Ed. 1): Water quality - Sampling - Part 9: Guidance on sampling from marine waters
- ISO 5667-14 (1998, Ed. 1): Water quality - Sampling - Part 14: Guidance on quality assurance of environmental water sampling and handling

- ISO 5667-15 (1999, Ed. 1): Water quality - Sampling - Part 15: Guidance on preservation and handling of sludge and sediment samples
- ISO 5667-19 (2004, Ed. 1): Water quality - Sampling - Part 19: Guidance on sampling of marine sediments
- EN ISO 5667-19 (2004): Water quality - Sampling - Part 19: Guidance on sampling in marine sediments (ISO 5667-19: 2004)

Macrozoobenthos/Macrophyts/Phytobenthos:

Standards

- ISO 9391 (1993, Ed. 1): Water quality - Sampling in deep waters for macro-invertebrates - Guidance on the use of colonization, qualitative and quantitative samplers
- prEN ISO 16665 (under Approval: 2005-04): Water quality - Guidelines for quantitative sampling and sample processing of marine soft-bottom macrofauna (ISO/FDIS 16665: 2005)
- prEN 15196 (under Approval: 2007-03): Water quality - Guidance on sampling and processing of the pupal exuviae of Chironomidae (Order Diptera) for ecological assessment
- prEN ISO 19493 (under Development: 2007-08): Water quality - Guidance on marine biological surveys of littoral and sublittoral hard bottom

Guidelines

- Manual for Marine Monitoring in the COMBINE Programme of HELCOM, PART C. Programme for monitoring of eutrophication and its effects, Annex C-8 Soft bottom macrozoobenthos: <http://sea.helcom.fi/Monas/CombineManual2/PartC/CFrame.htm>
- Manual for Marine Monitoring in the COMBINE Programme of HELCOM, PART C. Programme for monitoring of eutrophication and its effects, Annex C-9 Guidelines for monitoring of phytobenthic plant and animal communities in the Baltic Sea: <http://sea.helcom.fi/Monas/CombineManual2/PartC/CFrame.htm>
- JAMP eutrophication monitoring guidelines – benthos (ASMO 1997)

Phytoplankton:

Standards

- prEN 15204 (under Approval: 2005-11): Water quality - Guidance standard for the routine analysis of phytoplankton abundance and composition using inverted microscopy (Utermöhl technique)
- ISO 10260 (1992): Water quality - Measurement of biochemical parameters - Spectrometric determination of the chlorophyll-a concentration

Guidelines

- Manual for Marine Monitoring in the COMBINE Programme of HELCOM, PART C. Programme for monitoring of eutrophication and its effects, Annex C-6 Phytoplankton species composition, abundance and biomass: <http://sea.helcom.fi/Monas/CombineManual2/PartC/CFrame.htm>
- JAMP eutrophication monitoring guidelines – phytoplankton species composition (ASMO 1997)
- Manual for Marine Monitoring in the COMBINE Programme of HELCOM, PART C. Programme for monitoring of eutrophication and its effects, Annex C-4 Phytoplankton chlorophyll-a: <http://sea.helcom.fi/Monas/CombineManual2/PartC/CFrame.htm>

- JAMP eutrophication monitoring guidelines – chlorophyll a (ASMO 1997)
- Manual for Marine Monitoring in the COMBINE Programme of HELCOM, PART C. Programme for monitoring of eutrophication and its effects, Annex C-5 Phytoplankton primary production: <http://sea.helcom.fi/Monas/CombineManual2/PartC/CFrame.htm>

Zooplankton

Guidelines

- Manual for Marine Monitoring in the COMBINE Programme of HELCOM, PART C. Programme for monitoring of eutrophication and its effects, Annex C-7 Mesozooplankton: <http://sea.helcom.fi/Monas/CombineManual2/PartC/CFrame.htm>

Fishfauna:

Standards

- CEN 230172 Water quality – Sampling of fish with gillnets
- prEN 14962 (under Approval: 2005-10): Water quality - Guidance on the scope and selection of fish sampling methods
- prEN 14757 (under Approval: 2005-08): Water quality - Sampling of fish with multi-mesh gillnets
- EN 14011 (2003): Water quality - Sampling of fish with electricity

Guidelines

- Manual for Marine Monitoring in the COMBINE Programme of HELCOM, PART C. Programme for monitoring of eutrophication and its effects, Annex C-10 Guidelines for coastal fish monitoring: <http://sea.helcom.fi/Monas/CombineManual2/PartC/CFrame.htm>

Microbiology/Bacterioplankton:

Standards

- ISO 8199 (1988, Ed. 1): Water quality - General guide to the enumeration of micro-organisms by culture
- *ISO/TR 13843 (2000, Ed. 1): Water quality - Guidance on validation of microbiological methods*
- ENV ISO 13843 (2001): Water quality - Guidance on validation of microbiological methods (ISO/TR 13843: 2000)
- *ISO 6222 (1999, Ed. 2): Water quality -- Enumeration of culturable micro-organisms -- Colony count by inoculation in a nutrient agar culture medium*
- EN ISO 6222 (1999): Water quality - Enumeration of culturable micro-organisms - Colony count by inoculation in a nutrient agar culture medium (ISO 6222: 1999)
- EN ISO 17994 (2004): Water quality - Criteria for establishing equivalence between microbiological methods (ISO 17994: 2004)
- prEN ISO 19458 (under Approval: 2006-02): Water quality - Sampling for microbiological analysis (ISO/DIS 19458: 2004)

Biomarkers, detection of biological effects of contaminants

Standards

- EN ISO 10253 (1998): Water quality - Marine algal growth inhibition test with *Skeletonema costatum* and *Phaeodactylum tricornutum* (ISO 10253: 1995)

- prEN ISO 10253 (under Approval: 2006-06) Water Quality - Marine algal growth inhibition test with *Skeletonema costatum* and *Phaeodactylum tricomutum*
- EN ISO 5667-16 (1998): Water quality - Sampling - Part 16: Guidance on biotesting of samples (ISO 5667-16:1998)
- ISO 14669 (1999): Water quality - Determination of acute lethal toxicity to marine copepods (Copepoda, Crustacea)
- prEN ISO 16712 (under Development: 2005-10) Water quality - Determination of acute toxicity of marine or estuarine sediments to amphipods (ISO 16712)
- prEN ISO 7346 (rev, under Development: 2006-12) Water quality - Determination of acute lethality to freshwater and marine fish

Guidelines

- JAMP guidelines for general biological effects monitoring (ASMO 1997)
 - Technical Annex 1: whole sediment bioassays
 - Technical Annex 2: sediment pore-water bioassays
 - Technical Annex 3: sediment sea water elutriates
 - Technical Annex 4: water bioassays
 - Technical Annex 5: CYP1a
 - Technical Annex 6: lysosomal stability
 - Technical Annex 7: liver neoplasia/hyperplasia
 - Technical Annex 8: liver nodules
 - Technical Annex 9: externally visible fish diseases
 - Technical Annex 10: reproductive success in fish
- JAMP guidelines for contaminant-specific biological effects monitoring (ASMO 1997)
 - Technical Annex 1: metal-specific biological effects monitoring
 - Technical Annex 2: PAH-specific biological effects monitoring
 - Technical Annex 3: TBT-specific biological effects monitoring (rev. ASMO 1998)

Annex 8:

Quality Assurance Panel of the German Marine Monitoring Programme (GMMP)

4th Macrozoobenthos Ring Test „Determination and counting of macrozoobenthos species from the western Baltic Sea in an artificial sediment sample“, summary

The 4th macrozoobenthos ring test of the GMMP has been finished successful with support of numerous external experts in 2004. 16 laboratories of the GMMP took part in this ring test. They had to determinate and count 22 selected macrozoobenthos species of the GMMP-area. The aim was to check the taxonomical expertise and the precision of sorting and counting of these laboratories. Furthermore information about comparison of macrozoobenthos data should be received, problems in determining special groups of macrozoobenthos organisms should be stressed and the statistical methods should be improved.

The methods of data analysis were almost the same than in the 3rd macrozoobenthos ring test of the GMMP: successful qualitative and quantitative hits and the Maximum-Likelihood-Method. In a first step the taxonomical determination and the sorting and counting were analysed separately. After that a combined qualitative and quantitative analysis were carry out.

The results of qualitative and quantitative successful hits with reference to the participating laboratories show that only 4 laboratories had problems with the determination step and 8 of 16 show good results. The half of all laboratories reached good sorting and counting results and one lab found all individuals.

For species contained with more than 5 individuals in the sample a tolerance interval could determinate and than the z-scores were calculate: one laboratory and the species *Fabricia* were striking.

The comparison of the different methods of statistical data analysis shows that the Maximum-Likelihood method is more sensitive than the method of successful hits. A “Goodness”-Plot illustrates also the competence of laboratories: 5 laboratories show very good overall results, 4 laboratories had some problems with taxonomical determination and one especially with sorting and counting. No laboratory had determinate all species correctly, nevertheless the taxonomical expertise is okay: 4 laboratories had a rate of false determination of 10 %, 8 laboratories had a rate of false determination between 10 and 20 % and 4 Laboratories had a rate of false determination > 20. The species: *Arctica islandica*, *Retusa obtuse*, *Fabricia stellaris*, *Polydora quadrilobata*, *Pholoe assilimis*, *Microdeutopus gryllotalpa*, and *Corophium crassicornes* caused some problems at the species determination step. The results of counting were mostly precise despite the small numbers of individuals (≥ 1) (one lab without mistake). Taxonomical determination and counting should be separate evaluated, than problems are identified more clearly.

Annex 9:**2nd Macrophytobenthos Workshop*****„Methods of Macrophytobenthos Monitoring in the Context of the GMMP and the EU-WFD including Exercises of Identification of Marine Macrophytes“***

organized by
the Quality Assurance Panel of the German Marine Monitoring Programme,
the Biological Institute of Helgoland of the foundation of the Alfred Wegener Institut für
Polar- und Meeresforschung (AWI),
the Biological Station Hiddensee of the Ernst-Moritz-Arndt-University of Greifswald and
the University of Rostock, Dept. Ecology

First Announcement and registration**Part 1 – Hard Bottom Monitoring**

Date: 11 – 15 April 2005

Venue: Biological Institute of Helgoland

Part 2 – Soft Bottom Monitoring

Date: 20 – 24 June 2005

Venue: Biological Station Hiddensee

There was no mandatory international monitoring of macrophytes up to now. The implementation of the EU Water Framework Directive will change this situation. By 2006, the existing monitoring programmes have to be standardized within the GMMP which makes it necessary that Germany's Federal States at the coast harmonize and co-ordinate their monitoring of macrophytes.

The workshop will focus on the comparison of methods of the monitoring of macrophytes on hard and soft bottom. This comparison shall be based on presentations on different methods which have currently been applied in Germany and her neighbour countries. Additionally, comparative in-situ sampling and practical exercises to identify the species shall be another tool for such comparison. Experts shall give useful instructions for the identification of the collected species. At the same time, the most appropriate standardized determinations keys and possible needs for further development are to be found out. This workshop shall result in proposals for uniform guidelines concerning the monitoring of macrophytes in the context of the GMMP and the EU WFD (i.e. obligation to set up herbaria, obligation to take a determined number of sub-samples, choice of areas where samples are to be taken according to regional particularities).

Objectives of the workshops:

1. Detailed presentation of current German monitoring strategies and exchange of experiences about macrophytobenthos monitoring in other countries within the scope of EU-WFD so that these methods can be compared and assessed
2. Improvement of knowledge for the identification of species, especially of difficult families and genera (i.e. brackwater phanerogames – Potamogeton spp., Ruppia spp., Zostera noltii, Chara spp., Cladophora, Enteromorpha, Ulva, Ceramium strictum-complex)
3. Practical comparisons of monitoring methods on the isles of Helgoland and Hiddensee
4. Discussion of existing identification keys and their applicability in practice and discussion of the required accuracy
5. Development of guidelines for practical realisation of macrophytobenthos monitoring in the future within the framework of the GMMP and the EU-WFD

Participation fee:

The attendance of the workshop is free of charge. However, participants will have to pay for travel expenses, accommodation and meals themselves. For invited foreign experts the Quality Assurance Panel of the Federal Environmental Agency will take over travel expenses and accommodation.

Number of participants and registration:

The number of participants is limited to 25 - 30 persons. The workshop is especially addressed to persons who are involved in the GMMP and the EU-WFD. If there are any vacancies other interested parties will be invited to attend.

Please would you be so kind as to send us your binding registration (cf. attachments 3a and b) by **31 January 2005** at the latest. You will get a confirmation as soon as possible. Please fill in a separate form for each participant and each workshop location.

We would highly appreciate it if you could send a list of literature concerning identification of macrophytes available to you as well as the description of your monitoring method to petra.schilling@uba.de by 18 February 2005 at the latest.

Board and lodging:

Please make your own arrangements for board and accommodation. If costs are shared the opportunity to have breakfast together may be offered. Those interested in this option are requested to check the corresponding box on the registration form. We are furthermore checking whether this is possible for lunch too.

Biological Institute of Helgoland

Participants may be accommodated in simple self-catering single and twin rooms in the Wilhelm-Mielck-House belonging to the Institute. The twin rooms can also be booked as a single room (please, indicate it in the registration form). The bed linen will be provided without extra costs. A well equipped kitchen exists (including refrigerator and cupboards). The rooms do not have their own bathrooms (toilet and shower on the floor). The costs per night are € 8.70 (students) and € 14.30 for non students. You can book directly with Ms Kathrin Böhmer (kboehmer@awi-bremerhaven.de, Tel.: +049-4725-819-282) – please, book as soon as possible. She will confirm your booking. There are also hotels, guesthouses or apartments available. We are not able to assist participants in booking accommodation. Information about hotels and guesthouses can be found under: <http://www.helgoland.de/>.

Biological Station Hiddensee

Participants can be accommodated in simply furnished bungalows (three 4-bed and four 3-bed bungalows) belonging to the Station. Accommodation costs are € 5.00 per bed and night, plus a fee of € 5.00 per person for the bed linen provided. You may prepare your breakfast in the common kitchen if you want. Please indicate your wishes on the registration form. The Quality Assurance Panel is unable to assist participants in finding other kinds of accommodation. Information about hotels and guesthouses can be found under: <http://www.hiddensee.de/>

Arrival:

Biological Institute Helgoland

Participants may take the train or plane to Cuxhaven and change to a ship to Helgoland. Furthermore there are many daily air connections i.e. from Büsum, Bremerhaven, Wilhelmshaven-Mariensiel, Emden and Norddeich/Norderney to Helgoland. More information can be found under: <http://www.helgoland.de/reise01.htm>.

Biological Station Hiddensee

Participants can go by train to Stralsund or by car to Schaprode/Rügen. There is a regular ferry service to Kloster/Hiddensee from these two towns. Please see the schedules under: <http://www.frs.de/hiddensee/start.htm>. In addition, water taxis operate from Schaprode at intervals of about 1 hour or as needed. The fares are higher than those of the regular ferries. In Schaprode, there is a parking lot for long-term parking (two days and more: € 2.00 per day) You need an official invitation.

Programme and technical scheduling:

Attachments 1 and 2 show the preliminary programmes. You are invited to participate in the workshop preparation. Please make appropriate proposals, ask questions and give examples of your daily practice.

All participants are requested to supply samples (natural, fixed or living macrophytobenthos samples, preparations, videos, CD's, photos etc.). Please let us know in due time if any special technical equipment is needed.

For preparing the workshop documents all participants are requested to send a description of existing methods of monitoring of macrophytes and a list of appropriate literature to petra.schilling@uba.de (word-file) by 18 February 2005 at the latest. If you use special identification keys it would be very helpful to send us a copy before the workshop to make it available for all participants.

Furthermore participants are requested to bring along the literature they use for determination. Microscopes and stereo microscopes are available.

Additionally we recommend the following equipment:

- needles and tweezers for microscopically preparations,
- magnifying glass,
- rubber boots,
- weatherproofed clothes,
- clip file (if available).

Diving

Divers need their own diving equipment and a valid brevet and a valid official medical document for divers. We state explicitly that we can not take out a special insurance for divers. Therefore diving takes place only at your own responsibility and only after consulting the official divers of the Biological Institute Helgoland.

Presentations and summary report

The time for lectures should be restricted to 30 minutes. It is planned to compile a workshop report and to have it published. The lecturers are kindly asked to provide their presentations as a word file during the workshop.

It would be appreciated if you could send an abstract of your presentation (about half a page) three weeks before the workshop at the latest to petra.schilling@uba.de for compiling workshop documents for all participants.

Languages.

Workshop languages are German and English (without translation).

Preliminary Programme

Part 1 –Hard Bottom Monitoring – April 2005 Helgoland

Monday, 11 April 2005 Arrival

15:00 hrs Official welcome at the Laboratory, explanation of the technical equipment of the institute, organisation of the practical exercises

- *Inka Bartsch (Biological Institute of Helgoland):*
Presentation of the workshop issues, the investigation areas and of different hard bottom monitoring schemes
- *Rolf Karez (LANU, Flintbek):*
The implementation of the macrophyte monitoring in Schleswig Holstein (North and Baltic Seas)
- *Katharina Reichert (Biologische Anstalt Helgoland):*
Development of a long-term monitoring strategy for the inter-tidal benthos of Helgoland: Experimental design and analysis

In the evening: "get together" in a restaurant of Helgoland

Tuesday, 12 April 2005

(Low tide: 9:38 hrs, expected water level – 0.1 m, high tide: 15:07 hrs expected water level + 2.7 m)

08:10 hrs Excursion to the north mudflats (monitoring exercises, sampling of material for identification exercises)

14:00 hrs Analysis of monitoring exercises
lectures and determination exercises

- *Mats Walday (NIVA, Oslo/Norwegian), to be confirmed:*
Presentation of the ISO guidance on marine biological surveys of littoral and sub littoral hard bottom - suggested methods for inter-tidal and sub-tidal communities in the context of the EU-Water Framework Directive
- *Hans Kautsky (University of Stockholm/Sweden):*
Introduction into the 'ICES guideline for phytobenthic communities monitoring' and Swedish marine hard bottom monitoring methods in the context of the EU-WFD: demands, practice and analysis

Wednesday 13 April 2005

(Low tide: 10:04 hrs, expected water level – 0.1 m, high tide: 15:39 hrs expected water level + 2.6 m)

08:15 hrs Excursion to the mudflats, comparison of monitoring-methods focussing eulitoral sampling sites

14:00 hrs Analysis of monitoring exercises
lectures and determination exercises

- *Frithjof Moy (NIVA, Grimstad/Norwegian):*
Critical assessment of standard Norwegian monitoring methods of marine hard bottom communities: experiences from the Norwegian coastal monitoring programme;

Circumstances of the intercalibration group under EU-Water Framework Directive on theoretical and practical macrophyte monitoring

Thursday 14 April 2005

(Low tide: 10:32 hrs, expected water level: 0.0 m, high tide: 16:12 hrs, expected water level: + 2.5 m)

08:30 hrs Lectures and identification exercises

- *Ian Tittley (Natural History Museum London/England):*
The different levels of resolution in macrophyte monitoring:
How important is the determination of species?

Discussion of existing determination keys and their practical applicability; discussion of necessary determination levels

Noon: Diving excursion and comparison of
monitoring-methods focussing on sub-littoral
sampling sites (max. 8 participants at their own
risk)

- *Karin Fürhaupter (MARILIM)*
Discussion of all sampling techniques using recent videos

In the evening: "get together"

Friday 15 April 2005

09:00 hrs Final discussion

- *Inka Bartsch (Biological Institute of Helgoland):*
Development of guidelines for macrophytobenthos monitoring in the future and within the scope of EU-WFD

15:00 hrs **Departure**

Preliminary Programme

Part 2 –Soft Bottom Monitoring – June 2005 Hiddensee

Monday, 20 June 2005

Arrival

15:00 Hrs Official welcome at the Laboratory, explanation of the technical equipment of the institute, organisation of the practical exercises

- Irmgard Blindow (Biological Station Hiddensee):
- Introduction in the investigation area
- Hendrik Schubert (University of Rostock)
- Macrophytobenthos Monitoring in Mecklenburg-Vorpommern (Baltic Sea) – methods, analyses and suggestions for improvements and standardisations
- Karin Fürhaupter (MARILIM, Kiel):
- Macrophytobenthos Monitoring: demands and reality – report of the practice.

In the evening: „get together in a restaurant on Hiddensee (“Wieseneck” or “Hitthim”)

Tuesday, 21 June 2005

08:30 hrs Excursion to the Griebener Bight (sampling onshore)

At the same time:

Excursion with the research vessel „Prof. F. Gessner“ to the Kubitzer Bodden (sampling with a dredge or a grab)

14:00 hrs Identification exercises and lectures

- Georg Martin (Estonian Marine Institute, Tallinn/Estonia), tbc:
- Mixture of soft and hard bottom substrates – monitoring experiences of Estonia
- Johanna Mattila (Husö biologiska station, Åbo/Finland), tbc:
- Strategies of macrophyte sampling on soft bottom in Finland
- Marja Koistinen (Botanical Museum, Helsinki/Finland), tbc:
- Experiences in monitoring of charophytes in Finland
- Bo Rasmussen (DMU, Roskilde/Denmark), tbc:
- Monitoring and classification of eelgrasses in the context of the EU-Water Framework Directive – experiences from Denmark
- Anja Schanz (Biological Institute List):
- Overall survey of eelgrass and (macro)-green algae in the North and Baltic Seas – Strategies to implement the Monitoring of macrophytes on soft bottom substrates

Wednesday, 22 June 2005

08:30 hrs Excursion to the Griebener Bight (sampling onshore)

At the same time:

Excursion with the research vessel „Prof. F. Gessner“ to Kubitzer Bodden (sampling with a dredge or a grab)

14:00 hrs Identification exercises and lectures

- Dirk Schories (University of Rostock):
- Experiences with the recording of the coverage and the abundance of benthic red and brown algae in the North and Baltic Seas
- Irmgard Blindow (Biological Station Hiddensee):
- Taxonomical problems of the determination of Characeae in the period of non-yielding fruits
- Christian Blümel (University of Rostock):
- Morphological differentiation of *Zostera nana* and *Zostera marina*, Determination of *Ruppia* and *Zannichellia*
- Ruth Nielsen (Botanical Museum, Copenhagen/Denmark), tbc:
- Modern and practicable taxonomic keys as standard in macrophyte monitoring in the North and Baltic Seas to be used in the framework of the EU-WFD: current keys and potential needs (focussing on difficult groups like Enteromorpha/Ulva, filamentous browns, Ceramiales, Cladophora / Acrosiphonia / Spongomorpha-complex)

Thursday, 23 June 2005

08:30 hrs: Identification exercises

14:00 hrs Lectures

- Gabriele Stiller (Biological Mapping and Expertise):
- Monitoring of macrophytes and angiosperms in transitional waters– overview (Marsh waters and tidal part of river Elbe)
- Karin Fürhaupter (MARILIM):
- Discussion of all sampling techniques using recent videos
- Uwe Selig (Universität Rostock):
- Elaboration of guidelines for the implementation of future monitoring of macrophytes within the EU-WFD

In the evening: „get together“

Friday, 24 June 2005

09:00 hrs Final discussion

13:00 hrs **Departure**

Annex 10:

QA activities in 2005 – 2006 in HELCOM and OSPAR areas

Parameter	Subject	Organized by	Date	National/International exercise	Remarks
<i>Phytoplankton</i>	Workshop for Species identification with focus on small diatoms	HELCOM Phytoplankton Expert Group	Workshop planned for September/October 2005, Denmark	International	Contact person: Irina Olenina (irina.olenina@balticum-tv.lt)
	Workshop on intercalibration exercise on comparison of phytoplankton samples taken from 0 – 10 and 0 – 20 m and lectures on new changes in taxonomy of dinoflagellates and <i>Scirpsiella/Wolozynskia</i>	HELCOM Phytoplankton Expert Group	Workshop planned for 2006, Finland	International	Contact person: Norbert Wasmund (norbert.wasmund@io-warnemuende.de)
	Phytoplankton ring test	Algaline, Finnish Institute of Marine Research	Ring test in 2005	National/International potential	Contact person: Mika Raateoja (mika.raateoja@fimr.fi)
	Phytoplankton ring test	Institute of Aquatic Ecology, University of Latvia	Ring test planned for 2005	National/International	Contact person: Iveta Ledaine (iveta@monit.lu.lv)
	Ring test of counting and determination of biomass of cultivated algae	German Quality Assurance Panel of GMMP	Ring test in preparation for 2006/2007	National/International potential	Contact person: Petra Schilling (petra.schilling@uba.de)
	Workshop for identification of diatoms	German Quality Assurance Panel of GMMP	Workshop planned for 2006/2007	National/International potential	Contact person: Petra Schilling (petra.schilling@uba.de)

Parameter	Subject	Organized by	Date	National/International exercise	Remarks
<i>Chlorophyll a</i>	Chlorophyll a ring test round 41	QUASIMEME	April – September 2005	International	QUASIMEME Webpage: http://www.quasimeme.marlab.ac.uk/
	Intercalibration of chlorophyll a together with nutrients, salinity and turbidity	Algaine	Intercalibration 2005	National/International	Contact person: Mika Raateoja mika.raateoja@fimr.fi
	Ring test of determination of chlorophyll-a	German Quality Assurance Panel	Ring test planned for 2005/2006	National	Contact person: Petra Schilling (petra.schilling@uba.de)
<i>Macrozoobenthos</i>	Ring test of Determination of macrozoobenthos species	German Quality Assurance Panel of GMMP	Ring test in preparation for 2006/2007	National/International potential	Contact person: Petra Schilling (petra.schilling@uba.de)
	Ring test of Determination and enumeration of macrozoobenthos species in an artificial sediment sample	German Quality Assurance Panel of GMMP	Ring test in preparation for 2006/2007	National/International potential	Contact person: Petra Schilling (petra.schilling@uba.de)
	Macrozoobenthos intercalibration	National Environmental Research Institute (Dept. of Marine Ecology)	Intercalibration 2005	National	Contact person: Peter Henriksen (pet@dmu.dk)
	Participant-supplied sample macrozoobenthos ("own sample")	UK NMBAQC Scheme / BEQUALM	Intercomparison in 2005/2006	National/International potential	Contact person: Myles O'Reilly (Myles.OReilly@sepa.org.uk)

Parameter	Subject	Organized by	Date	National/International exercise	Remarks
	25 species sample of UK macrozoobenthos provided by NMBAQC Contractor (sample to be analysed by NMMP laboratories)	UK NMBAQC Scheme / BEQUALM	Ring test in 2005/2006	National/International potential	Contact person: Myles O'Reilly (Myles.OReilly@sepa.org.uk)
	25 species sample of UK macrozoobenthos provided by participants (Specimens from NMMP laboratories to be validated by NMBAQC Contractor)	UK NMBAQC Scheme / BEQUALM	Validation test in 2005/2006	National/International potential	Contact person: Myles O'Reilly (Myles.OReilly@sepa.org.uk)
	Targeted of UK macrozoobenthos - decapods	UK NMBAQC Scheme / BEQUALM	Ring test in 2005/2006	National/International potential	Contact person: Myles O'Reilly (Myles.OReilly@sepa.org.uk)
	Contractor-supplied sample of UK macrozoobenthos 1 sample supplied to participating laboratories)	UK NMBAQC Scheme / BEQUALM	Ring test in 2005/2006	National/International potential	Contact person: Myles O'Reilly (Myles.OReilly@sepa.org.uk)
Macrozoobenthos (continued)	Taxonomical macrozoobenthos workshop	UK NMBAQC Scheme/ BEQUALM	Workshop planned for November 2005	National/International potential	Contact person: Myles O'Reilly (Myles.OReilly@sepa.org.uk)
	Epibiota, Photographic ring test (Images/video clips supplied on web for identification: http://www.nmbaqcs.org)	UK NMBAQC Scheme/ BEQUALM	Ring test in 2005	National/International potential	Contact person: Jon Davies (jon.davies@jncc.gov.uk)
Phytobenthos (<i>macroalgae, angiosperms</i>)	Training course on phytobenthos monitoring methods	Estonian Marine Institute	Workshop in May 2005	International	Contact person: Georg Martin (georg.martin@ut.ee)

Parameter	Subject	Organized by	Date	National/International exercise	Remarks
	Workshop on monitoring methods of macrophyte monitoring in relation to the GMMP and the EU-WFD including exercises for species determination	German Quality Assurance Panel	Workshop for hard bottom: in April 2005 and for soft bottom: in June 2005	National/International	Contact person: Petra Schilling (petra.schilling@uba.de)
	Macrophytobenthos intercalibration	National Environmental Research Institute (Dept. of Marine Ecology)	Intercalibration 2006	National	Contact person: Peter Henriksen (pet@dmu.dk)
<i>Zooplankton</i>	HELCOM/BSRP Zooplankton Monitoring Expert Workshop	Zooplankton Expert Group	Workshop in preparation for March 2005	International	Contact person: Lutz Postel (lutz.postel@io-warnemuende.de)
	Taxonomical Zooplankton BSRP Workshop	Sea Fisheries Institute	Workshop planned in 2005	International	Contact person: Piotr Margoński (pmargon@mir.gdynia.pl)

Annex 11: Progress in the Development of the ICES Environmental Databases

In 2004 work on the upgrading of the ICES Environmental Databases has concentrated on: 1) testing and releasing the integrated reporting format for biological community data; 2) optimizing the reference code database; and 3) entering QA participation results from QUASIMEME into a test QA database for use in the OSPAR MON assessment. Work in 2005 will concentrate on clarifying specifications for data checking, data extractions and data products, and on finalising a program to convert data supplied in 2.2 to version 3.2 reporting format.

Reporting format

The ICES Environmental data reporting format version 3.2 has been tested and released for all environmental data types. It can be found at <http://octopus.ices.dk/env/repfor/ERF32.doc>. The ICES Data Centre will develop software for data submitters to convert data from the 2.2 format to the 3.2 format. Note that the completeness of the conversion depends on what data types and parameters are reported. The Data Centre can be contacted for more information on the conversion program at accessions@ices.dk.

Reference code database

The reference code database (RECO) is currently being updated to support version 3.2 of the reporting formats and can be found at <http://www.ices.dk/datacentre/reco>. This database defines the fields in the reporting format records and provides lists of the valid values that can be entered. New additions will include tables to clarify reporting requirements for the various Commissions (i.e., priority substances, cofactors etc.).

Data submission screening facility

A web-based data checking program in DATSU, the “Data Screening Utility”, will be developed in 2005. Specifications must be developed for this program and all Working Groups are invited to contribute.

Database for integrated data

The “Database on Oceanography and Marine Ecosystems” (DOME) will be developed in 3-phases as outlined in the table below.

Phase	Environmental Data	Oceanographic Data	Fishery Data	Plan
1	Contaminants and Biological Effects in Biota (including Fish Disease), Seawater and Sediments	Hydro-chemistry		2005
2	Biological Community	CTD, surface and pump data		2006
3			Under consideration	2007

Request for action

If applicable, Working Groups are invited to:

1. Write specifications for data summaries and extractions for use at meetings. Current extractions are described on an ad hoc basis but are basically aggregated according to data type, year, station and parameter groups. If this should continue, please define “station” and identify parameter groups (including relevant cofactors).
2. Write specifications for data screening which are deemed necessary to improve the quality of data in assessments and prioritise. A list is being compiled by the ICES Data Centre and will be available on the web.
3. Define data products.

These specifications should be submitted to the ICES Data Centre by 1 May 2005.

Annex 12: SGQAB specifications

The following were identified at the SGQAB meeting but the list may be expanded upon until 1 May 2005. The final list will be included in the Data Centre specifications for DATSU, RECO, data extractions and data products from DOME.

Specifications for information via RECO:

Information concerning requirements for the HELCOM monitoring programme are necessary and should be made easily available for HELCOM data submitters when reporting data to the ICES Data Centre. This is ideally done via the reporting formats. Discussions with the Data Centre led to another option of making this information available in the reference code database RECO. The following should be included:

1. HELCOM mandatory records per data type
2. HELCOM optional records per data type
3. HELCOM cofactors and required fields per data type

Specifications for data checking in DATSU:

1. When data is coded for a HELCOM monitoring programme, data should be checked against the RECO list "HELCOM cofactors and required fields per data type". The factors/fields here must be included in the file at least once or a warning should be generated informing of these requirements.
2. There is a need for checks to ensure that a data submission which is coded for a HELCOM monitoring programme contains QA information for biological community data. Lack of information will give a warning. This can be done by the following checks:
 - a.) If field MPROG = BMP or COMBINE, at least one analytical method record (type 21) must be included in the file with REFSK not blank. REFSK must include a code starting with "HC" to ensure that a HELCOM guideline section has been used.
 - b.) At least one intercomparison record (type 94) record must be included in the file.

Specifications for data summaries:

A table showing an overview of submitted data (or only accepted data in DOME?) should include a table per country, (reporting laboratory), year, data type, and parameter group reported.

Specifications for data products:

Maps per data type (showing depth profile?).

Plot of time series per data type.

Annex 13: Application of AQC Criteria

THE APPLICATION OF AQC CRITERIA, AT THE FIELD SAMPLING, LABORATORY ANALYSIS AND DATA ENTRY STAGES, FOR EVALUATING THE ACCEPTABILITY OF BIOLOGICAL DATA IN MONITORING PROGRAMMES

A sub-group comprising SGQAB and SGQAE members discussed the topic on four levels, i.e., site criteria, sample criteria, laboratory data criteria and data bank criteria. The group expressed concern that Z-scores, which are an appropriate instrument in chemical QA, may not be suited to compare biological community data.

Use ISO standards – AQC criteria should be in the standard. This document is for in-house sampling where other standards do not exist.

Rejection is not the only way to deal with dubious data; another option is flagging and use of different levels of precision – need clear information on the reason for flagging.

In preparing the following account, information was gleaned from five main sources, namely:

Field Operations Manual (1998) and Quality Assurance Manual (1998). Southern California Bight 1998 Regional Marine Monitoring Survey (Bight '98). (See: <http://www.sccwrp.org/regional/98bight>)

ICES TIMES Report No. 16 (1991). (Benthic communities: Use in monitoring point-source discharges).

NMMP “Green Book” (UK National Marine Monitoring Programme, 2001).

Rumohr (1999). (ICES TIMES report No. 27) and BEQUALM CD-ROM.

NMBAQC/BEQUALM Annual Report (Year 9): 2002/2003.

In general, there was an encouraging degree of consistency in the advice provided in these documents. We are also grateful to Hasse Kautsky, Stockholm for providing advice regarding phytobenthos sampling.

A. Site criteria

(i) New/random/single sampling sites:

Site Acceptability Criteria (subtidal remote sampling using grabs/cores)

Subtidal sampling with the use of remotely operated grabs or cores may not be possible at some stations for a variety of reasons (e.g., the presence of kelp beds, rocky bottoms and inappropriate water depths). The suitability of a station should be examined by reference to the output from acoustic sounders, and (with care) trial deployment of sampling gear. Stations should, where feasible, be located at the centre rather than at the margins of strong signals which indicate homogeneity in habitat type. If unsuitable, a station may, in a typical local sampling design, be moved no more than 100 m from any assigned coordinate site and $\pm 10\%$ of the nominal depth. Clearly, the scope for relocation will depend upon the distance from adjacent stations, and the objectives of the survey. If, after three attempts to locate a suitable station, the station still falls in an area unsuitable for sampling, the station may be abandoned and the reasons for station abandonment will be recorded.

Site Acceptability Criteria (small trawls and towed dredges)

Subtidal sampling with such devices may not be suitable because of uneven/rocky terrain which may yield unreliable samples or result in damage or loss of sampling gear. The suitability of a station should be examined by reference to the output from acoustic sounders, and (with care) trial deployment of sampling gear. Tow lengths/duration may vary depending on location and survey objectives; for small (e.g., 2 m) beam trawls, tow lengths may typically be 0.5 km to 1 km. The scope for relocation of sites if the initial location is unsatisfactory must be determined on the basis of information on substratum type and therefore it is not possible to specify precise distances for relocation; circumstances which dictate abandonment of the site will depend upon the distance between adjacent sampling stations in the planned survey design and the overall goals of the project.

Criteria for rejection of samples by trawls and dredges

Samples should be rejected and sampling repeated (when possible) if:

- the net has not maintained contact with the bottom
- standardised towing time or distance not achieved
- severe net damage (e.g. cod end ripped)
- net was twisted
- net inversion

(otter trawls):

- net opening was not sufficient
- net collapsed
- loss of trawl door
- warp broken

Site Acceptability Criteria (phytobenthos and zoobenthos)

- A site (transect) should incorporate the photic zone. Deeper sites are rejected if no hard-substratum animal communities are included in the study;
- The starting point of a transect may be moved to the nearest shore when rejected if beyond the photic zone or in the case of being on land;
- A transect may have the starting point on hard substratum and then may be extended into deeper water until other substrata occur.
- For targeted studies of specific epibenthic assemblages, an appropriate strategy must be used to clearly identify the location of the target assemblages, for example, remote video sampling can be used to identify seabed assemblages.

Site Rejection Strategy (general)

A sampling site may be rejected if any of the following occurs:

- If the location places the site on land or in an obviously unsuitable location;
- If the site exceeds the depth boundaries ($\pm 10\%$) established for the project;
- For benthic subtidal sites sampled by grab or core, if a suitable substratum is not found after three attempts at the nominal location, and up to three attempts at two other locations;
- For trawl sites, if the acoustic survey identifies unsuitable substrata at three locations, if any equipment is lost or damaged, or if the site is deemed unsuitable by the Chief Scientist, or their designate, for a valid reason.

Site Rejection Strategy (phytobenthos)

A sampling site may be rejected if any of the following occurs:

- If relevant (e.g., scope is to only investigate hard, stable substrates), the transect should be rejected if it stops before the major part of the photic zone is incorporated. Then, a site should be chosen which may incorporate the whole photic zone; alternatively the transect is divided into suitable sub-distances so that the entire photic zone is incorporated (e.g., on extremely shallow coasts);
- For “reference” (unimpacted) locations, the site clearly has to be rejected when it is under obvious anthropogenic influence (pier, harbour, major outlet, public bath, etc.). Typically, the site may then be moved a maximum of 200 m;
- The transect may be rejected if it consists of other substrata than set by the scope of the investigation, e.g., if hard substrates are investigated, all sites with substrate fractions less than large stones (high instability) may be rejected;
- In the case where substratum type is a major criterion, the transect is interrupted at the depth where unsuitable substratum is reached, even if it is above the limit of the photic zone.
- Where the assemblage type is a major criterion, the target assemblage is absent or only present in part of the transect.

(ii) Routine/long-term sampling site:

Generally, the site must be suited for the chosen sampling method (thus, for example, a grab sampler is clearly not suited for boulder fields and steep rock walls). The site should be located within an area of relative homogeneity, and should not be subject to variation as a result of demonstrable localised gradients of change, the detection of which is outside the scope of the study in question.

B. Sample criteria

Need to add hard substrata – refer to proposed ISO standard

For sampling using grabs or corers, samples should be rejected and sampling repeated (when possible) if:

- Less than 5 litres of sample volume is obtained by a 0.1 m² grab in soft sediments or less than 2.5 litres in hard-packed sand (for HAPS corers, less than 15 cm penetration)* ;
- Incomplete closure is noted;
- An obvious uneven bite is noted;
- Spillage during transferring of samples is observed;
- Samples clearly deviate from the other samples (e.g., there is an observed change from clean sand samples to *Mytilus* bank samples). The samples should nevertheless be kept, in order to record faunal patchiness, but another sample should be taken to replace it in calculating the mean for the station.

*The advice in the above-mentioned reports dealing with field sampling methods (from ICES, US and UK sources) is consistent in that, for a conventional 0.1 m² grab sampler, 5 l approximates to a depth of 7 cm, while 2.5 l approximates to a depth of 5 cm. Measures of sample depth are taken vertically at the centre of the closed grab buckets.

For the collection of overlying water samples, criteria for rejection may include: inadequate volume, inadequate amounts of added fixative, the presence of turbidity (e.g., mud arising from bottom contact), or the presence of air bubbles in a sample collected for the determination of oxygen content.

Criteria for rejection of samples (phytobenthos)

Samples should be rejected and sampling repeated (when possible) if:

- More than 20 % of the material within the frame is lost (as judged by the diver). Then the frame is re-sampled at the same site by tossing it once more (frame-bag is emptied first);
- When the sampling bag is torn and shows major holes through which portions of the sample can be lost;
- If there is too high wave action to secure sampling close to the surface without major loss, these samples are taken under calmer conditions at the site;
- If more than 2 % of sample is lost when transferring it to, e.g., a bag for conservation;
- When the description for the identification of the sample is lost or damaged and cannot be recovered.

C. Laboratory data criteria

Criteria for attention include:

- taxonomic outliers (new species/wrong determinations);
- poor QA/AQC performance.

An example of the application of laboratory AQC criteria is provided by the UK NMBAQC scheme. The criteria apply to the outcome of independent re-analysis of samples of the benthic macrofauna collected by individual laboratories (i.e., “own samples”). Information is also provided on approaches to the AQC of associated particle size analyses of sediments.

Benthic macrofauna

Extraction efficiency – total taxa target

To achieve a pass, the number of taxa extracted should be within $\pm 10\%$ or ± 2 taxa (whichever is greater) of this total.

Extraction efficiency – total individuals target

The total should be within $\pm 10\%$ or ± 2 individuals (whichever is greater) of the total resulting from re-analysis of the samples.

Total wet weight biomass target

The total value should be $\pm 20\%$ of the value obtained from re-analysis of the sample.

Bray-Curtis comparison

Comparison of the two untransformed data sets, arising from the work of the participating laboratory and from independent re-analysis, should result in a Bray-Curtis Similarity Index of $\geq 90\%$.

Overall flag

An overall flag for the station has been agreed for the “own sample” exercise to act as a filtering system for the UK National Marine Monitoring database. Failed own samples are flagged, along with the other replicates from the same site. Participating labs with failed samples are informed of the required or recommended remedial action. NMMP laboratories must complete remedial action and be re-audited. Data flags will only be removed from all the site replicates once a PASS has been achieved.

Note: because of the considerable variation in the estimation of biomass the flag for this component is not presently included in the determination of the overall flag for the “own sample” exercises.

Data flags are now applied using a graded system related to the untransformed Bray-Curtis scores to give a five tier Similarity Index (BCSI) as follows:

100 % BCSI:	Excellent
95–<100 % BCSI:	Good
90–95 % BCSI:	Acceptable
85–90 % BCSI:	Poor – remedial action suggested
<85 % BCSI:	Fail – remedial action required

Particle size standards

In the UK, laboratories engaged in benthic monitoring are now required to determine the percentage silt/clay (<63 microns) and derived measures from the outcome of particle size analyses (median particle size, mean particle size, sorting coefficient and inclusive graphic skewness), to which a “Z score” system, in a way comparable to AQC practices for analytical chemistry, is applied. The z-score represents the deviation of a result from the mean population of data in units of standard deviation.

The equation for calculating the z-score is as follows:

$$Z = \left| \frac{(x_i - A)}{s} \right|$$

x_i = value obtained by the lab

A = true or assigned value from all the samples (mean with outliers removed)

s = population standard deviation (calculated from results excluding outliers)

As the required confidence limits of the data are 95% then the limits of acceptable values of z are +2 or –2. Z-scores were applied to all 5 parameters.

A protocol for applying an overall ‘Pass/Fail’ flag on the PS exercise remains to be devised.

In addition, the formation of written sediment descriptions needs to be examined in detail.

These could utilise the PS exercise summary statistics or the Folk Triangle (The Folk sediment description triangle can be found on the British Geological Surveys web site or the reference is Folk, R. L. (1974) *The Petrology of Sedimentary Rocks*. Hemphill Publishing Co.).

Thus an individual laboratory will be deemed to have failed if its estimate of a measure lies outside $\pm 2SD$ of the overall mean for that measure determined from all participating laboratories. The suitability of this approach is presently being retrospectively evaluated, using archived data from earlier AQC data.

In the case of laboratories using different particle sizing techniques (typically conventional mechanical sieving and weighing *versus* laser sizing) there is an important and fundamental need to establish the compatibility (and hence acceptability) of data deriving from the different methods.

D. Data bank criteria

Relevant considerations relating to quality control include:

Data content is important: ICES data format should ensure that it includes all the required metadata fields in national/international portals.

Data must have appropriate metadata otherwise those data sets cannot be included within national databases.

- Incomplete data reporting, e.g., missing stations of species;
- Missing metadata. These may be essential (e.g., lat/long datum; mesh size) or desirable (e.g., meteorological conditions at the time of sampling). The existence of an “audit trail” may greatly assist in eliminating problems (i.e., how/by whom/why were data collected, edited or changed and quality controlled);
- Non-compliance with data format. This may be due to inappropriate or incompletely normalized data format;
- Non-compliance with international standards (e.g., conventions for taxonomic nomenclature, international dictionaries of parameters, ship codes) must also be considered;
- Flagging of doubtful or low quality data (i.e., plausibility control). Conflicting data or internal inconsistencies will be relevant considerations in deciding upon the need to flag data. Changes to the flag should only be made in cooperation with the data originator.
- Where supporting photographic information are available, it must be clearly labelled and linked with the biological data.

Although relating mainly to chemical determinands, the paper given in ACME (2001) concerning evaluations of the acceptability of data in environmental monitoring programmes is valuable in this context.

Annex 14: Comments from SGQAE on JAMP Eutrophication Monitoring Guidelines

Comments from SGQAE on Phytoplankton Species Composition

Although this document is a guideline, and not a manual, it is too general, and does not cover essential steps needed to arrive at common and comparable methods for the analysis of phytoplankton species composition and abundance.

Since the guideline was written, a lot has happened concerning sampling, analysis and nomenclature of phytoplankton. The knowledge of toxic, and in other ways harmful phytoplankton species, has also increased.

There are now several international and regional guidelines and manuals that can be consulted for a major revision and update of the present JAMP Eutrophication Monitoring Guidelines: Phytoplankton Species Composition, e.g.

- Manual for Marine Monitoring in the COMBINE Programme of HELCOM, PART C. Programme for monitoring of eutrophication and its effects, Annex C-6 Phytoplankton species composition, abundance and biomass: <http://sea.helcom.fi/Monas/CombineManual2/PartC/CFrame.htm>
- ICES. 2004. Biological monitoring: General guidelines for quality assurance. Ed. By H. Rees. ICES Techniques in Marine Environmental Sciences, No. 32. 44 pp.
- prEN 15204 (under Approval: 2005-11): Water quality - Guidance standard for the routine analysis of phytoplankton abundance and composition using inverted microscopy (Utermöhl technique)

In the present document only a few suggestions for changes have been made.

Comments from SGQAE on Chlorophyll *a*

Although this document is a guideline, and not a manual, it is too general, and does not cover essential steps needed to arrive at common and comparable methods for the analysis of chlorophyll *a* concentration.

There are more recent international and regional guidelines and manuals that can be consulted for a major revision and update of the present JAMP Eutrophication Monitoring Guidelines: Chlorophyll *a*, e.g.

- Manual for Marine Monitoring in the COMBINE Programme of HELCOM, PART C. Programme for monitoring of eutrophication and its effects, Annex C-4 Phytoplankton chlorophyll-a: <http://sea.helcom.fi/Monas/CombineManual2/PartC/CFrame.htm>
- Aminot, A. and Rey, F. 2001. Chlorophyll *a*: Determination by spectroscopic methods. ICES Techniques in Marine Environmental Sciences, 30. 18 pp.
- ICES. 2004. Biological monitoring: General guidelines for quality assurance. Ed. By H. Rees. ICES Techniques in Marine Environmental Sciences, No. 32. 44 pp.

In the present document only a few suggestions for changes have been made.

Comments from SGQAE on Benthos

The document too general and therefore needs major revision.

More details are needed on; e.g. sampling design etc and to be separated into 2 documents covering:

- Soft bottom
- Rocky shore.

The document also does not currently include guidance on intertidal/mudflat sampling.

There are more recent international and regional guidelines that need to be consulted including:

- New ISO standard covering soft-bottom fauna expected to be agreed spring 2005. Water Quality: Guidelines for quantitative sampling and sample processing of marine soft-bottom macrofauna (Final vote - May 2005)
- Guidelines for the conduct of benthic studies at aggregate extraction sites. DTLR/CEFAS publication May 2002. Product code 02DPL001. Contains information on planning, design and conduct of benthic surveys, processing of samples, use of acoustic methods for examining the seabed, methods for data analysis and quality assurance.
- Rocky shore standard for sampling flora and fauna, accepted by ISO as work item. (Water Quality: Guidance on Marine Biological surveys of littoral hard bottom ISO/DIS 19493:2004). The standard is based on the Norwegian National standard for rocky shore sampling.
- ICES TIMES (Techniques in Monitoring Environmental Sciences) 32 Biological Monitoring: General guidelines for quality assurance. Ed. H Rees

Comments from SGQAE on ICES TIMES 32 document

They are considering use of ITIS system where ERMS may be better used as it is currently being updated and is directed at European marine species.

Referring to Norwegian standard for rocky shore sampling – this is now an ISO work item: (Water Quality: Guidance on Marine Biological surveys of littoral hard bottom ISO/DIS 19493:2004)

Best practice: Refer to proceedings of NMBAQC/BEQUALM Humber workshop:

Proudfoot, R.K., M. Elliott, M.F. Dyer, B.E. Barnett, J.H. Allen, .L. Proctor, N. Cutts, C. Nikitik, G. Turner, J. Breen, K.L. Hemmingway & T. Mackie. 1997. Proceedings of the Humber Benthic Field Methods Workshop, Hull University 1997. Collection and processing of macrobenthic samples from soft sediments; a best practice review. Environment Agency R&D Technical report E1-116, 47pp. + appendices. Peterborough, UK.

Annex 15: QA/AQC ACTIVITIES RELATED TO STUDIES OF BIOLOGICAL COMMUNITIES IN THE ICES AREA

Dear colleague

Following a recommendation of the ICES Steering Group on Quality Assurance of Biological Measurements in the Northeast Atlantic (SGQAE), I am writing to request your response to a short questionnaire concerned with the nature of current commitments to QA/AQC activity in relation to Biological Monitoring in the ICES area. The purpose is to obtain an up-to-date summary of the overall extent of present effort, so that we can better target our work to meet the QA/AQC needs of individual laboratories and member countries.

Please find the time to contribute to this important survey.

Please return your contribution by <<Insert date>>

QUESTIONNAIRE ABOUT THE USE OF GUIDELINES FOR BIOLOGICAL DATA COLLECTION AND QUALITY ASSURANCE BY CONTRACTING PARTIES OF OSPAR/JAMP

1. Which type of institution are you in?

- ☐ University laboratory
- ☐ Governmental laboratory
- ☐ Non-profit research organization
- ☐ Large commercial organization
- ☐ Commercial consultancy

2. What country are you located in (the address of your institution is optional)?

3. Do you contribute to national monitoring of:?

- ☐ Phytobenthos
- ☐ Phytoplankton
- ☐ Macrobenthos
- ☐ Meiobenthos
- ☐ Coastal Fish
- ☐ Zooplankton
- ☐ Ecotoxicology
- ☐ Chemistry

4. Is your organization taking part in any type of quality assurance/analytical quality control activity?

- ☐ No
- ☐ Yes If Yes, at which level:
 - ☐ in-house only
 - ☐ between laboratories
 - ☐ between countries

5. Do you use any of the following guidelines

- ☐ JAMP
- ☐ HELCOM Combine
- ☐ ICES Times documents
- ☐ ISO
- ☐ CEN
- ☐ National guidelines
- ☐ In house guidelines
- ☐ Other (specify)

6. Are you aware of the following guidelines

- ☐ JAMP eutrophication monitoring guidelines - phytoplankton species composition, ASMO 1977
- ☐ JAMP eutrophication monitoring guidelines - chlorophyll a, ASMO 1977
- ☐ JAMP eutrophication monitoring guidelines – benthos, ASMO 1977
- ☐ JAMP guidelines on Quality Assurance for biological monitoring in the OSPAR area, ASMO 2002
- ☐ ISO 5667-9 (1992, Ed. 1): Water quality - Sampling - Part 9: Guidance on sampling from marine waters
- ☐ ISO 5667-19 (2004, Ed. 1): Water quality - Sampling - Part 19: Guidance on sampling of marine sediments
- ☐ prEN ISO 16665 (under Approval: 2005-04): Water quality - Guidelines for quantitative sampling and sample processing of marine soft-bottom macrofauna (ISO/FDIS 16665: 2005)
- ☐ prEN 15204 (under Approval: 2005-11): Water quality - Guidance standard for the routine analysis of phytoplankton abundance and composition using inverted microscopy (Utermöhl technique)
- ☐ ISO 10260 (1992): Water quality - Measurement of biochemical parameters - Spectrometric determination of the chlorophyll-a concentration

7. Is your laboratory/organisation accredited?

☐ No

☐ Yes If Yes, what form does the accreditation take and what is the name of the accrediting organization?

☐ Are you seeking accreditation

8. How do you improve and maintain the professional skills of your staff?

☐

Sampling and sample-handling Workshops (if yes, how often?)

☐

Intercalibrations (if yes, how often?)

☐

Take part in ring-tests (if yes, how often?)

☐

Other (please specify)

9. May we refer to your institution by name in connection with any examples of 'best practice'? *(NB. We will NOT refer to named institutions/individuals under any other circumstances, and the confidential nature of your response is therefore assured)*

☐

Yes

☐

No

Please return completed questionnaires - preferably by e-mail to: <<Insert email>>

or by post to: <<Insert address>>

Annex 16: Proposed ToRs

The **ICES/OSPAR/HELCOM Steering Group on Quality Assurance [SGQA]** (Chairs: Anda Ikauniece (Latvia) and Jon Davies, UK) will meet at ICES Headquarters from ## to ## February 2006 to:

- a.) Review and finalise the guidelines for acceptability of biological sampling and analytical practices required by monitoring programmes;
- b.) review and evaluate the status of implementation and the practical use of OSPAR/ICES quality assurance guidelines in marine monitoring and assessment programmes in the OSPAR/ICES/HELCOM area and provide guidance for future assessment programmes;
- c.) review the quality assurance measures proposed for monitoring and assessment of EcoQOs;
- d.) evaluate and report on the outcome of relevant workshops/intercalibration exercises/ring tests, and document future events, including progress with the implementation of phase II of the BEQUALM scheme;
- e.) review the progress with, and offer further advice on the development of QA of biological measurements in relation to OSPAR JAMP products,
- f.) review progress in the development and use of the ICES Biological Community Database
- g.) review the quality assurance measures being adopted in the marine monitoring and assessment aspects of the EC Water Framework Directive

SGQA will report for the attention of the ACME and the Marine Habitat and Oceanography Committees by ## 2006, as well as to the ## meeting of the OSPAR Working Group on Concentrations, Trends and Effects of Substances in the Marine Environment (SIME).

Supporting Information

Priority:	High.
Scientific Justification and relation to Action Plan:	<p>Items a) – f) are as direct response to the OSPAR request.</p> <p>Item g) is in support of the development of the ICES Biological Community Database</p> <p>Item h) is in preparation for upcoming needs to modify the OSPAR JAMP/CEMP</p>
Resource Requirements:	
Participants:	Scientists from ICES Member Countries, involved in QA of monitoring of phytoplankton/primary production, phytobenthos, zooplankton or zoobenthos.
Secretariat Facilities:	Meeting room and secretariat assistance are required.
Financial:	
Linkages to Advisory Committees:	ACME, ACE
Linkages to other Committees or Groups:	SGQAB, SGQAC, WGPE, WGZE, BEWG, SGNSBP, WGEKO, WGMDM, WGSAM, MHC
Linkages to other Organisations:	OSPAR, ISO, CEN, EC
Cost share	OSPAR 50 % ICES 50 %

Annex 17: Recommendations

SGQAE recommends that ICES/OSPAR:

Establishes formal contact with ISO/CEN to seek collaboration in the development of marine standards, highlighting the experience available within the ICES community. ICES should forward the list of current and emerging standards to OSPAR/HELCOM and BEWG, WGPE, WGZE and WGEKO for their information.

Highlights to OSPAR, the lack of international participation in BEQUALM and therefore that the scheme does not fulfil its role in international QA.

Reviews its decision to only adopt the ITIS codes for the biological community database and actively considers the European Register Marine of Species as a second coding system to improve the ease of submitting data.

Considers moving towards a more distributed database to avoid the QA problems associated with holding copy of national data, and also concentrates on developing reporting and assessment tools.

Does not extend the final deadline (2006) for the biological community database

Requests that BEWG, WGPE, WGZE and WGEKO considers the draft text on the Application of AQC Criteria (Annex 8, SGQAE 2004) at their meetings in 2005/6 and provide comments to the Chairs of SGQAE and SGQAB before the 2006 meeting.

Advises OSPAR that SGQAE considers the current JAMP guidelines for Benthos, Phytoplankton and Chlorophyll do not meet current QA standards and their status should be downgraded. OSPAR should take appropriate measures to ensure these guidelines are promptly reviewed to ensure they meet current international standards.

Advises OSPAR that it should ask their contracting parties provide specific information on the use of guidelines and standards by the laboratories contributing data to national monitoring schemes. SGQAE offer a questionnaire of help collect relevant information. SGQAE would review the results at its 2006 meeting.

Ask OSPAR to circulate the SGQAE guidance on quality considerations relating to the testing and use of EcoQO and other biological indicators (Annex 10, SGQAE 2004) to the groups developing EcoQOs, requesting feedback on its content and applicability for SGQAE to consider in 2006.

Ask OSPAR to gather specific information on the proposed QA measures to be adopted for EcoQOs, from the relevant drafting groups, and provide this information to SGQAE for review in 2006.

Suggest to OSPAR that it considers aligning the measures proposed for EcoQOs with the emerging assessments under the Water Framework Directive.

Reviews, with OSPAR, the availability data for assessment of the JAMP products, particularly focussing on its QA, since there appear to be few data currently being submitted to ICES. SGQAE would review the QA information on these data to assess its suitability for JAMP assessment.

In conjunction with OSPAR, actively participates in the ECOSTAT group that is developing guidance for marine monitoring under the EC WFD to ensure that existing marine guidance is adopted.

In conjunction with OSPAR, makes formal contact with the EC and National Research Agencies to encourage the adoption of existing international standards and protocols by research

and survey programmes funded by those organisation, to improve the availability of data for international assessments.

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