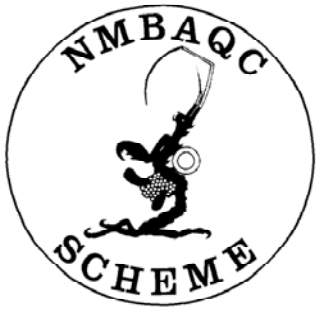

BEQUALM
NATIONAL MARINE BIOLOGICAL ANALYTICAL QUALITY CONTROL SCHEME
Annual Report - Year 15 - 2008/2009

A report prepared by the NMBAQC Coordinating Committee – June 2010

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This Year 15 Annual Report follows the summarised format introduced for Year 13. It provides a synopsis of the scheme activities for Year 15 (2008-09). Most of the detailed information previously incorporated within the Annual Report is now available as separate reports or bulletins on the scheme's website. The relevant documents are all cited here and the reader is directed via hyperlinks to the NMBAQC website as appropriate.

The NMBAQC coordinating committee held four meetings during the scheme Year 15 on 4th June 2008, 11th August 2008, 2nd December 2008 and the 10th March 2009. The minutes from these committee meetings are now available on the NMBAQC website.

Committee Membership for Year 15 is shown in Appendix 1.

1 Scheme Review

The scope of the NMBAQC scheme continued to develop in Year 15 to encompass the requirement to provide quality assurance for assessments under the Water Framework Directive (WFD), for which monitoring commenced in the UK in 2007. The scheme still maintains its role to provide Analytical Quality Control for Invertebrate and Particle Size data collected for UK CSEMP (Clean Seas Environment Monitoring Programme – formerly the NMMP). Under the UK Marine Monitoring and Assessment Strategy (UKMMAS) the NMBAQC coordinating committee now reports to the Healthy and Biologically Diverse Seas Evidence Group HBDSEG. In Year 15, the NMBAQC endorsed the World Register of Marine Species (WoRMS) species list to HBDSEG. The first stage in the endorsement of WoRMS involved work by Unicomarine to link up the species list in their benthic invertebrate database, UNICORN (which is currently used in the scheme operation), with the WoRMS species list.

In Year 15 the NMBAQC coordinating committee was aided by a new full time Quality Assurance post, jointly funded by the Environment Agency and the Joint Nature Conservation Committee. This post is responsible for progressing QA programmes for biological elements which Competent Monitoring Authorities and Conservation Agencies are required to monitor for under the Water Framework and Habitats Directives. The key outputs of this QA development will be reported to the NMBAQC with the aim of introducing new training and testing modules or implementation of standard protocols under the NMBAQC's remit (Benthic Invertebrates, Particle Size, Fish, Phytoplankton, Macroalgae and Phytoplankton).

Year 15 of the scheme involved training and testing exercises for the Invertebrate, Particle Size, Macroalgae, Phytoplankton Components as have been run in previous years. This year the annual Invertebrate Component workshop involved a four-day expert taxonomic workshop at the Dove Marine Laboratory in Cullercoats. New items of work for the NMBAQC in Year 15 involved: a trial reverse ring test for the Fish Component; a trial video ring test for the Epibiota Component; and, a workshop to discuss Particle Size Analysis methodology with key UK government agencies and commercial laboratories.

This year the participation level in the NMBAQC grew compared to Yr 14 (33 participants), with a total of 48 organisations involved in it's training and testing exercises (see Appendix 2).

Summaries of all the component activities are provided below:

1.1 Invertebrate component

Contract Manager: Myles O' Reilly, SEPA
Component Administrator: David Hall, Unicomarine

1.1.1 Summary of activities

The fifteenth year of the Scheme (2008/09) involved a series of four modules under the Invertebrate component:

- Invertebrate Ring Test identification (RT35 and RT36) training exercise.
  Two sets of twenty-five specimens of benthic invertebrates (RT35 general invertebrate ring test, RT 36 'targeted' Gastropoda specimens) supplied for identification by participating laboratories.

- Macrobenthic invertebrate sample analysis (MB16) training exercise.
  One contractor supplied macrobenthic sample for full laboratory processing (extraction, enumeration and biomass).

- Laboratory Reference (LR) training exercise.
  Participating laboratories submitted twenty-five benthic invertebrate specimens for re-examination by the contractor. The specimens could be either voucher material from their reference collection for confirmation or difficult/problematic taxa about which they are unsure)

- Own Sample (OS38, OS39 and OS40) reanalysis testing exercise, with pass/fail flag for UK NMMP laboratories.
  Participating laboratories were requested to send the contractor their benthic invertebrate data matrices from which three samples were selected. The three chosen samples were submitted and were reanalysed by the contractor. Each 'Own Sample' was assessed on the efficiency of extraction, identification, enumeration and biomass.

The Invertebrate Taxonomic Workshop was held under the auspices of the Dove Marine Laboratory in Cullercoats in November 2008. Due to extended refurbishment work at the Dove Lab the venue was transferred to the nearby Grand Hotel and a makeshift lab set up in one of the function rooms. This workshop was tailored for experts, and covered problematic taxa from: Hesionidae, Terebellomorpha, Nephtyidae, and Spionidae. Please see Appendix 3 for the workshop timetable.

1.1.2 Summary of exercise results

Thirty-six laboratories participated in the benthic invertebrate component of the NMBAQC Scheme in Yr 15 (see Appendix 2). Sixteen participants were government laboratories; twenty were private consultancies. Fourteen of the participants were responsible for CSEMP (Clean Seas Environment Monitoring Programme) sample analysis (excluding subcontracted samples). A summary of the overall NMBAQC participation levels is shown in Appendix 3.

The results of the Own Sample (OS38, OS39 and OS40) reanalysis testing exercise were generally poorer than the results from Yr 14 OS exercise. The Bray-Curtis similarity index (between the participating laboratory and the contractor) was greater than 90% (Pass flag) in only 74% of samples (compared with 95% of samples in Yr14). Most of the Fail samples (19 of 24) were attributable to Non-CSEMP labs. All the laboratories with 'Poor' or 'Bad' sample flags for CSEMP samples addressed their 'failing' samples by undertaking remedial action. However, three of the twelve laboratories with 'Poor' or 'Bad' sample flags for Non-CSEMP samples did not confirm whether remedial action was completed, therefore are given a 'status unknown' flag. One participating laboratory did not supply data for Own Sample selection and one disposed of samples before the audit. As a result these samples were deemed to have failed the NMBAQC Scheme standards and remain flagged. For submission and flagging of NMMP invertebrate sampling sites see Appendix 4.

Of the training exercises, the Macrobenthic exercise MB16 posed similar problems to previous MB tests: some problems associated with faunal extraction and identification of the taxa. The ring test RT35 had fairly good agreement between the identifications made by the participating laboratories and those made by Unicomarine Ltd. The majority of the generic errors can be attributed to three polychaete and two crustacean taxa. The 'targeted' ring test (RT36 – 'Gastropoda'), as expected posed more problems for species identification. The Laboratory Reference (LR) exercise did not reveal any clear problem areas, however there were differences in the approach to this exercise by the individual laboratories (some laboratories used this to confirm voucher specimens whilst others sought a means of having 'unknowns' identified).

More detailed information on these exercises can be found in the contractors report below. Among the recommendations highlighted by the contractor is the need for NMBAQC to develop standard protocols detailing the processing requirements for macrobenthic invertebrate samples and for participants to utilise the NMBAQC's UK Standard Taxonomic Literature List database to minimise the differences in literature used for identification of invertebrates.

Benthic Invertebrate Component Annual Report, Year 15 (2008/09)
Hall, D., 2010. Benthic Invertebrate component - Report from the contractor. Scheme Operation - Year 15 - 2008/09. A report to the NMBAQC Scheme participants. 23pp, June 2010.

Yr 15 Own Sample Report:
Own Sample Module Summary Interim Report OS38, 39 & 40 - March 2010
Hall, D.J., 2010. National Marine Biological Analytical Quality Control Scheme. Own Sample Module Summary Interim Report OS38, 39 & 40. Report to the NMBAQC Scheme participants. 26pp, March 2010.

Yr 15 Ring Test Bulletins
RTB 36 - May 2009
Worsfold, T.M. and Hall, D.J., 2009. National Marine Biological Analytical Quality Control Scheme. Ring Test Bulletin: RTB#36. Report to the NMBAQC Scheme participants. Unicomarine Report NMBAQCrtb#36, 35pp, May 2009.

RTB 35 -November 2008

Hall, D.J. and Worsfold, T.M., 2008. National Marine Biological Analytical Quality Control Scheme. Ring Test Bulletin: RTB#35. Report to the NMBAQC Scheme participants. Unicomarine Report NMBAQCrtb#35, 33pp, November 2008.

Yr 15 Macrobenthic Bulletins

MB 16 - June 2009

Hall, D.J. and Taylor, J.G., 2009. National Marine Biological Analytical Quality Control Scheme. Macrobenthic Exercise Results - MB16 (Version 2). Report to the NMBAQC Scheme participants. 20pp, June 2009.

1.2 Particle Size Component

Contract Manager: Myles O' Reilly, SEPA
Component Administrator: David Hall, Unicomarine

1.2.1 Summary of activities

The fifteenth year of the Scheme (2008/09) involved one module under the Particle Size Analysis component:

- Particle Size Analysis (PS32 and PS33) testing exercise, with pass/fail flag for UK CSEMP (NMMP) laboratories.
  Two marine sediment samples (one coarse the other much finer) supplied to participating laboratories for Particle Size Analysis.

Following the recommendations from previous years Particle Size Analysis testing exercises, work began on developing a NMBAQC guidance document for 'PSA for Supporting Biological Analysis'. During Year 15, an initial assessment of current PSA methods used by UK labs was undertaken through questionnaires sent out to NMBAQC Particle Size participating laboratories in June, 2008. Following this a workshop was held at Cefas, Lowestoft in February 2009 for the NMBAQC Particle Size participating laboratories to discuss 'best practice' methods which should be included in the NMBAQC guidance document. The Proceedings and supporting documents from this workshop are available on the NMBAQC's PSA Workshops page. Following this workshop Claire Mason (Cefas) began drafting the best practice guidance document for 'PSA for Supporting Biological Analysis' which is due to be completed in September 2010.

1.2.2 Summary of results

Thirteen laboratories participated in the particle size analysis component of the NMBAQC Scheme (see Appendix 2). Seven laboratories were government laboratories; six were private consultancies. Over half of the participants (7) were responsible for CSEMP (Clean Seas Environment Monitoring Programme) sample analysis. A summary of the overall NMBAQC participation levels is shown in Appendix 3.

The Particle Size testing exercise, PS32 (sandy mud sample) resulted in three 'fail' and fifty-seven 'pass' flags; two of these fails were the result of transcription errors. PS33 (sand sample) resulted in eleven 'fail' and forty-nine 'pass' flags; seven of these fails,

produced by two participants, are likely to be the result their 'non-mainstream' processing methodology.

More detailed information on this exercise can be found in the contractors report below. Among the recommendations highlighted by the contractor is the need for NMBAQC to develop standard protocols for Particle Size Analysis (sieve and laser technique).

PSA Component Annual Report, Year 15 (2008/09)
Hall, D., 2010. Particle Size component - Report from the contractor. Scheme Operation - Year 15 - 2008/09. A report to the NMBAQC Scheme participants. 9pp, March 2010.

Yr 15 Particle Size Reports:
PS33 - April 2009
Hall, D.J., 2009. National Marine Biological Analytical Quality Control Scheme. Particle Size Results: PS33. Report to the NMBAQC Scheme participants. Unicomarine Report NMBAQCps33, 19pp, April 2009.

PS32 - October 2008
Hall, D.J., 2008. National Marine Biological Analytical Quality Control Scheme. Particle Size Results: PS32. Report to the NMBAQC Scheme participants. Unicomarine Report NMBAQCps32, 7pp, October 2008.

1.3 Fish Component

Contract Manager: Steve Coates, Environment Agency
Component Administrator: David Hall, Unicomarine

The fifteenth year of the Scheme (2008/09) involved a series of two unofficial trial exercises which were conducted to assess the feasibility and logistical protocols for a reverse fish ring test. One exercise was aligned with the spring fish monitoring surveys and one with the autumn surveys (LR-F Trial_1 and LR_F Trial_2, respectively). The findings of these trial exercises are not presented by the contractors, however the logistics were deemed robust enough to commission an official exercise (RRT01) in the forthcoming Scheme year (2009/10).

More detailed information on this trial exercise can be found in the contractors report below.

Fish Component Annual Report, Year 15 (2008/09)
Hall, D., 2010. Fish component - Report from the contractor. Scheme Operation - Year 15 - 2008/09. A report to the NMBAQC Scheme participants. 4pp, June 2010.

1.4 Phytoplankton Component

Scheme Administrator: Joe Silke, Marine Institute, Galway, Ireland. Registration and fee collecting arranged through BEQUALM Website (based at CEFAS Lab, Lowestoft).

1.4.1 Summary of activities

The Phytoplankton inter-comparison exercise comprised of two exercises and one workshop:

- Enumeration of cells exercise: Four different sample types/treatments were given to participants to enumerate cells. Treatment 1 was a sample containing four species. Treatment 2 was a sample containing the same four species plus another species. Treatment 3 was a positive control (containing only the fifth species from Treatment 2). Treatment 4 was a negative control (containing no species). The species used in Treatments 1-2 were *Prorocentrum lima, Scrippsiella trochoidea, Coscinodiscus granii, Gymnodinium catenatum and Prorocentrum micans.* Cell densities were controlled in Treatments 1-3 and ranged from 100 to 1000 cells per 25 mL sample.

- Identification exercise: Two different sample treatments were given to participants to identify taxa. Treatment 1 was a set of 20 images. Treatment 2 was a set of 20 3D video clips.

- Workshop: Discussion of the results of the intercomparison and future directions of the exercise. Presentations were by the guest speaker Dr. Urban Tillman, Alfred Wegener Institute: 'Characterization of a novel azaspiracid-producing dinoflagellate from the North Sea' and 'Phagotrophy of planktonic protists – video observations'.

1.4.2 Summary of results

Thirty-four analysts from seventeen laboratories (from the UK, Ireland, Holland, Germany and Spain) participated in the Phytoplankton enumeration and identification ring test in 2008 (see Appendix 2).

The enumeration exercise showed good repeatability between participants, the Galway laboratory and the 'Galway Gold Standard'. The identification exercise results were considered excellent, with no systematic difference in the percentage correct between the image and video formats of presentation. Overall participants did quite well, with over 68% of the participants scoring over 80% in the taxonomic quiz.

More detailed information on this exercise can be found in the following contractor report:

Phytoplankton Enumeration And Identification Ring Test, 2009
Salas, R.G., 2009. Phytoplankton enumeration and identification analysis. Ring Test PHY-ICN-09-MI1 Exercise Report. 86pp.

1.5 Macroalgae Component

Contract Manager: Clare Scanlan, Scottish Environment Protection Agency
Component Administrator: Emma Wells, Wells Marine

1.5.1 Summary of activities

The macroalgae component exercise involved the identification of twenty species of rockyshore macroalgae, where laboratory photos within sorting trays and stereo and

compound microscope images were provided to highlight different morphological features.

1.5.2 Summary of results

Twenty participants from eleven laboratories participated in the third macroalgae ring test (RT03) circulated in August 2008 (see Appendix 2). A summary of the overall NMBAQC participation levels is shown in Appendix 3.

RT02 gave varying results for participants, with correct identification scores ranging between 24 and 37 (based on 1 point awarded for correct species name and 1 point awarded for correct genus name). The maximum score possible total was 40. Six species were correctly identified by all 20 participants.

More detailed results can be found in the following contractor report:

RT03 - September 2008
Wells, E., 2008. National Marine Biological Analytical Quality Control Scheme, Intertidal Macroalgal Ring Test RT03. Report to the NMBAQC Scheme participants. Wells Marine Surveys, September 2008.

1.6 Epibiota component

Contract Manager: Matt Service, AFBI
Component Administrator: Ian Sotheran, Envision

1.6.1 Summary of activities

The Epibiota trial video ring test involved three separate ring tests: RT01 in May 2008, RT02 in November 2008 and RT03 in March 2009. Individual tests had between 18-22 participants at 11-13 organisations who participated (see Appendix 2). Each test involved participants being asked to identify and enumerate epibiota and characterise the seafloor which they viewed in video clips and stills/freeze frames.

1.6.2 Summary of results

The Epibiota trial video ring test identified several issues, some of which were addressed and incorporated as the test developed, whilst others have become recommendations for improved future ring tests. Issues generally involved participants identifying biota to different taxonomic levels, and there were substantial discrepancies between counts and percentage cover estimates particularly when there were high numbers of biota. There was also substantial variation between participants interpretation of substrates (e.g. between coarse sand and gravels). There were also issues with the variable level of expertise of participants and the variable analysis methods used by participants. Finally, the marking scheme of the ring tests had some drawbacks, and future marking schemes will require the development of Pass/Fail criteria.

More detailed results and recommendations from the Epibiota trial video ring test can be found in the Epibiota Trial Video Ring Test Reports (2007-2009).

Appendix 1 - NMBAQC Co-ordinating Committee – Year 15 - 2008/2009

Name	Organisation	Position
Tim Mackie	Environment & Heritage Service, NI	Chair
Alison Miles	Environment Agency	Finance Manager, stepped down from August 2008
Amanda Prior	Environment Agency	Finance Manager, from August 2008
Prue Addison	Environment Agency / Joint Nature Conservation Committee	Secretary
Myles O'Reilly	Scottish Environment Protection Agency	Invertebrate Contract Manager
Steve Coates	Environment Agency	Fish Contract Manager
Joe Silke	Marine Institute, Ireland	Phytoplankton Contract Manager
Clare Scanlan	Scottish Environment Protection Agency	Macroalgae Contract Manager
Carol Milner	APEM Ltd	Contractors Representative – from August 2008
Lucie Oliver	Countryside Council for Wales / Environment Agency	CMA Representative
Matt Service	Agri-Food and Biosciences Institute, NI	CMA Representative
Keith Cooper	Centre for Environment, Fisheries & Aquaculture Science	CMA Representative
Mike Robertson	Fisheries Research Services, Aberdeen	CMA Representative

Appendix 2 - NMBAQC scheme participation for Year 15

Organisation	Invertebrate	Particle Size	Macroalgae	Epibiota	Phytoplankton
Agri-Food and Biosciences Institute	✓	✓		✓	✓
AMBIOS					
APEM Ltd	✓				
AWI/BAH, Germany					✓
Benthic Solutions Ltd	✓	✓			
Biotikos	✓				
CEMAR, QUB				✓	
Centre for Environment, Fisheries & Aquaculture Science	✓	✓	✓	✓	✓
CMACS Ltd	✓	✓			
Countryside Council for Wales	✓		✓	✓	
L.C.C.RR.PP., Spain					✓
Department of Local Government and the Environment, Isle of Man					✓
EMU Ltd.	✓	✓	✓	✓	
Environment Agency	✓	✓	✓		
Environmental Protection Agency, Ireland			✓		
ERT (Scotland) Ltd	✓	✓	✓		
Fish Vet Group	✓				
Fugro Survey Ltd	✓			✓	
Gardline Environmental	✓	✓		✓	
Grontmij / Aquasense	✓				
Haskoning UK Ltd.				✓	
Hebog Environmental Ltd	✓				
Hunter Biological	✓				
Institute of Estuarine and Coastal Studies, University of Hull	✓	✓	✓		
INTECMAR NIF, Spain					✓
IRTA Carretera del Poblenou					✓
Jacobs Engineering UK Ltd	✓				✓
Joint Nature Conservation Committee	Info Only				
Koeman en Bijkerk bv, Netherlands					✓
LVCC Palmones. Egmasa, Spain					✓
Marine Ecological Solutions Ltd.				✓	
Marine Ecological Surveys	✓			✓	

Organisation	Invertebrate	Particle Size	Macroalgae	Epibiota	Phytoplankton
Marine Farm Services, Shetland Seafood Quality Council (SSQC)	✓				
Marine Institute, Ireland	Info Only				Contract administrator
Marine Phytoplankton Ecologist					✓
Marine Scotland - Science (formerly Fisheries Research Services)	✓	✓		✓	✓
National University of Ireland (Martin Ryan Marine Science Institute)	✓				
Northern Ireland Environment Agency (formerly Environment and Heritage Service)	✓	✓	✓	✓	✓
Precision Marine Survey Ltd	✓	✓			
Scottish Association for Marine Science					✓
Scottish Environment Protection Agency	✓	✓	✓	✓	
Scottish Natural Heritage	Info Only			✓	
Unicomarine Ltd.	Contract administrator	Contract administrator	✓		
University of Ulster				✓	
University of Plymouth				✓	
University of St Andrews (SERG:ES)	✓				
University of Stirling	✓				
Wells Marine			Contract administrator		

Appendix 3 - BEQUALM/NMBAQC Scheme Taxonomic Workshop November 2008

BEQUALM/NMBAQC Scheme Taxonomic Workshop 10th-14th November 2008, The Grand Hotel (Dove Laboratory), Tynemouth.

Day	Session	Discussion / Demonstration / Practical	Aims	Session Leader
Monday 10th Nov. 2008	am	Arrival. Registration. Laboratory set-up.	Register participants. Laboratory setup.	David Hall (Unicomarine Ltd.)
	1:00pm	Buffet lunch	-	-
	2:00pm	Introduction. General information.	Welcome participants. Q&A session regarding workshop. Outline timetable.	Tim Mackie (NMBAQCC) David Hall (Unicomarine Ltd.)
	2:15pm	Introduction – The Dove Marine Laboratory. Brief details. Local information. Lab. rules (H&S issues).	To give brief history of Dove Marine Lab. and facilities. Areas of local interest. Pub & food guide.	Jane Delany (Dove Marine Laboratory)
	2:45pm	Discussion / Demonstration - Introduction to Hesionidae. Literature. Problem areas. Identification techniques.	To introduce the major features / terminology used for identification of Hesionidae.	Stephen Jarvis (Marine Invertebrate Ecological Services)
	4:00pm	Practical - Examination & identification of range of Hesionidae taxa from reference material.	To obtain identification experience. View / verify reference material.	Stephen Jarvis (Marine Invertebrate Ecological Services)
Tuesday 11th Nov. 2008	9:00am	Discussion / Demonstration - Introduction to Terebellomorpha: Terebellidae. Literature. Problem areas. Identification techniques.	To introduce the major features / terminology used for identification of Terebellidae.	Igor Jirkov (Moscow State University, Dept. Hydrobiology)
	am	Practical - Examination & identification of range of Terebellomorpha taxa from reference material.	To obtain identification experience. View / verify reference material.	Igor Jirkov (Moscow State University, Dept. Hydrobiology)
	pm	Discussion / Demonstration - Introduction to Ampharetidae. Literature. Problem areas. Identification techniques.	To introduce the major features / terminology used for identification of Ampharetidae.	Igor Jirkov (Moscow State University, Dept. Hydrobiology)
	pm	Practical - Examination & identification of range of Ampharetidae taxa from reference material.	To obtain identification experience. View / verify reference material.	Igor Jirkov (Moscow State University, Dept. Hydrobiology)
Wednesday 12th Nov. 2008	9:00am	Discussion / Demonstration - Introduction to Pectinariidae. Literature. Problem areas. Identification techniques.	To introduce the major features / terminology used for identification of Pectinariidae.	Igor Jirkov (Moscow State University, Dept. Hydrobiology)
	am	Practical - Examination & identification of range of Pectinariidae taxa from reference material.	To obtain identification experience. View / verify reference material.	Igor Jirkov (Moscow State University, Dept. Hydrobiology)
	pm	Discussion / Demonstration - Introduction to Nephtyidae. Literature. Problem areas. Identification techniques.	To introduce the major features / terminology used for identification of Nephtyidae.	Igor Jirkov (Moscow State University, Dept. Hydrobiology)
	pm	Practical - Examination & identification of range of Nephtyidae taxa from reference material.	To obtain identification experience. View / verify reference material.	Igor Jirkov (Moscow State University, Dept. Hydrobiology)
	4:30pm	Blue Reef Aquarium group trip.		
Thursday 13th Nov. 2008	9:00am	Discussion / Demonstration - Introduction to Spionidae. Literature. Problem areas. Identification techniques.	To introduce the major features / terminology used for identification of Spionidae.	Vasily Radashevsky (Institute of Marine Biology, Vladivostok)
	am/pm	Practical - Examination & identification of range of Spionidae taxa from reference material.	To obtain identification experience. View / verify reference material.	Vasily Radashevsky (Institute of Marine Biology, Vladivostok)
	4:00pm	Practical continued.	To obtain identification experience. View / verify reference material.	Vasily Radashevsky (Institute of Marine Biology, Vladivostok)
	7:30pm	Workshop Dinner – Spanish restaurant, El Torero, Newcastle.		
Friday 14th Nov. 2008	9:00am	Discussion - Spionidae summary.	To summarise the material observed and outline areas for further taxonomic study.	Vasily Radashevsky (Institute of Marine Biology, Vladivostok)
		Workshop feedback. Group photograph. Equipment pack up.	Distribute/collect workshop feedback forms. To pack up equipment & prepare for departure.	Tim Mackie (NMBAQCC) David Hall (Unicomarine Ltd.)
	10:30am	Tea & coffee; Departure	-	-

Appendix 4 - Submission and Flagging of YR 15 CSEMP Invertebrate data.

The grading and flagging process for CSEMP(NMMP) samples and data is described and discussed in the Benthic Invertebrate Component Scheme Standards (2010) on the NMBAQC website. CSEMP data is submitted on an annual basis by the relevant Competent Monitoring Authority (CMA) to the Merman database. The CMAs are also required to submit information indicating whether Analytical Quality Control has been successfully completed for their own CSEMP sites. The relevant CSEMP data remains flagged until confirmation is received that audited samples have passed according to the NMBAQC criteria. Where samples fail to achieve acceptable standards it is mandatory for CMAs to undertake appropriate remedial action in order to achieve a "Remedial Action Pass". Guidelines for undertaking remedial action and for amending CSEMP(NMMP) data following completion of audits are available in the Year 12 Annual Report. A flowchart summarising the Own Sample data amendment and submission process is shown below in Figure 1.

Collection and analysis of CSEMP samples is very expensive. It is unacceptable if data remains flagged due to samples not being processed properly, not submitted for audit in time, or not having remedial action completed.

CMA Laboratories must:

a. Ensure samples are not compromised
b. Provide required CSEMP data sets to the NMBAQC Scheme
c. Supply requested Own Samples and residues for audit
d. Complete all required remedial action
e. Complete post-audit data amendments
f. Ensure the amended data is submitted to the Merman database
g. Confirm completion of AQC to the Merman database

Results for Year 15 Own Sample audits on CSEMP stations are shown below in the Table1. Data sets submitted for audit selection should include all CSEMP stations sampled from the previous sampling year, 2007, although Lab K is ahead of schedule and has submitted 2008 data. Labs A, B, and B2 in the Scottish sector revised there monitoring strategies for CSEMP in 2006 and this new strategy continued in 2007. Lab C1 presented data for a new station (CSEMP 756; Gladstone, Mersey) but inadvertantly discarded the CSEMP samples prior to the Own Sample exercise. . Lab. H failed to submit data/samples before the required deadline and requested to submit 2007 and 2008 samples together in year 16. Their 2007 data remains flagged until the Year 16 audit is complete.

In Year 15 a number of 2008 WFD Day Grab samples were submitted for audit in lieu of CSEMP samples:

Lab C OS38 - TWE005; 2008WFD_Tweed; Day Grab – Pass Good.
Lab C1 - OS38 - RIB004; 2008WFD_Ribble; Day Grab – Pass Good.
Lab D - OS38 - HML025; 2008WFD_Humber; Day Grab – Fail Poor – Pass RA
Lab D - OS40 - BWO003; 2008WFD_Blackwater Outer – Pass Good.
Lab G. - OS40 - PGH001; 2008WFD_Pagham Harbour; - Pass Good.
Lab. I - OS39 - CAM018; 2008WFD_Camel; Day Grab - Pass Good.
Lab. J - OS38 - MHT027; 2008WFD_Milford Haven Trans - Pass Good.
Lab. J - OS39 - CBC011; 2008WFD_Cardigan BC – Pass Good.

These are treated here as if they are CSEMP samples although this dilutes the auditing effort on the actual CSEMP samples for which these labs are responsible. However the auditing effort already varies significantly between labs as they are each responsible for differing numbers of CSEMP stations yet are only required to submit three samples for audit per CMA lab.

Internal re-organisations within CMA labs and minor modifications of the CSEMP sampling programmes by CMAs are likely to continue over the coming years and tracking exactly which stations are sampled in a given year can be difficult. It remains evident that not all the relevant CSEMP data gathered by CMAs is presented to the scheme for audit. Moreover application of Pass status to a single CMA lab that may have actually subcontracted analysis to one or more other labs (who also participate independently in the scheme) make the sample auditing and flagging process more complicated. Most of the CSEMP labs that presented samples for audit in Year 15 achieved Good or Excellent grades first time around and the remaining labs that received initial Fails completed remedial action to achieve a Remedial Action Pass status.

TABLE 1. - CSEMP SAMPLE FLAGGING - YEAR 15

Lab	CSEMP Stations	Own Samples Selected	Initial Grade	Flag status
A	2007 CSEMP Firth of Clyde, (Inner - Stratum A)	Firth of Clyde @ Wemyss Point, mid channel (OS38)	Fail - Poor	PASS - RA
	2007 CSEMP Firth of Clyde, (Middle - Stratum B)	Firth of Clyde @ E of Brodick, mid channel (OS39)	Fail - Poor	PASS - RA
	2007 CSEMP Sound of Jura	Sound of Jura @ 14km W of Bellochantuy Bay (OS40)	Fail - Bad	PASS - RA
B	2007 CSEMP Cromarty Firth	Cromarty Firth, Dispersed site 1 (OS38)	Good	PASS
	2007 CSEMP Firth of Forth	Stn. 9, Firth of Forth Spatial Survey (OS39) Stn. 38, Firth of Forth Spatial Survey (OS40)	Good Good	PASS PASS
	2007 CSEMP Forth Estuary	-	-	PASS
B2	2007 CSEMP Fladen	-	-	PASS
	2007 CSEMP Minches	LM1; Minch Malin, Sea of Hebrides_se01 (OS40)	Good	PASS
	2007 CSEMP Moray Firth (Intermediate)	Rep C, MF2, Moray Firth Intermediate S_se01 (OS38) Rep E, MF3, Moray Firth Intermediate S_se01 (OS39)	Good Good	PASS PASS
	2007 CSEMP Moray Firth (offshore)	-	-	PASS
	2007 CSEMP Forth/Tay Offshore	-	-	PASS
	2007 CSEMP Firth of Clyde, (Outer - Stratum C)	-	-	PASS
	2007 CSEMP Solway Offshore	-	-	PASS
C	2007 CSEMP 210 Yarrow Slake	-	-	PASS
	2007 CSEMP 220 Budle Bay	-	-	PASS
	2007 CSEMP 225 Hebburn	Rep. A (OS40)	Good	PASS
	2007 CSEMP 235 Ferry Crossing	-	-	PASS
	2007 CSEMP 265 Alex. Bridge	-	-	PASS
	2007 CSEMP 270 Off Seaham	Rep. C (OS39)	Good	PASS
	2007 CSEMP 275 Sandy Point	-	-	PASS
	2007 CSEMP 305 Bamlett's Bight	-	-	PASS
	2007 CSEMP 315 No23 Buoy	-	-	PASS
	2007 CSEMP 325 Phillips Buoy	-	-	PASS

TABLE 1. Contd. - CSEMP SAMPLE FLAGGING - YEAR 15

Lab	CSEMP Stations	Own Samples Selected	Grade	Flag status
C1	2007 CSEMP 755 Seacombe Ferry, Mersey	-	-	FLAGGED
	2007 CSEMP 756 Gladstone, Mersey	Rep. C (OS40)	Sample disposed pre-audit Deemed Fail	FLAGGED
	2007 CSEMP 765 Ch Cl Buoy	-	-	FLAGGED
	2007 CSEMP 766 u/s 11 mile post, Ribble	-	-	FLAGGED
	2007 CSEMP 767 North Bay, Morecambe Bay	-	-	FLAGGED
	2007 CSEMP 768 St. Bees	Rep. E (OS39)	Sample disposed pre-audit Deemed Fail	FLAGGED
D	2007 CSEMP 356 Inside Spurn	Rep. E (OS39)	Good	PASS
	2007 CSEMP 357 Grimsby Roads	-	-	PASS
	2007 CSEMP 358 Sunk Island	-	-	PASS
F	2007 CSEMP 435 Woolwich	Rep. D (OS38)	Fail - Poor	PASS - RA
	2007 CSEMP 455 Mucking	Rep. C (OS39) Rep. E (OS40)	Good Good	PASS PASS
G	2007 CSEMP 505 Dock Head	Rep. C (OS39)	Good	PASS
	2007 CSEMP 526 Burham	Rep. D (OS38)	Good	PASS
	2007 CSEMP 527 Sun Pier	-	-	PASS
H	2007 CSEMP 245 NSTF14	No data submitted	Deemed Fail	FLAGGED
	2007 CSEMP 345 NSTF53	No data submitted	Deemed Fail	FLAGGED
	2007 CSEMP 536 Lyme Bay	No data submitted	Deemed Fail	FLAGGED
	2007 CSEMP 605 Celtic Deep	No data submitted	Deemed Fail	FLAGGED
	2007 CSEMP 805 SE IOM	No data submitted	Deemed Fail	FLAGGED
I	2007 CSEMP 555 Warren Point	-	-	PASS
	2007 CSEMP 565 Hamoaze	-	-	PASS
	2007 CSEMP 566 Upper South Deep	-	-	PASS
	2007 CSEMP 567 Wytch	Rep. D (OS38)	Good	PASS
	2007 CSEMP 576 Jennycliffe	Rep. A (OS40)	Good	PASS
J	2007 CSEMP Purton	-	-	PASS
	2007 CSEMP 635 Bedwin	Rep. A (OS40)	Good	PASS
	2007 CSEMP 645 Peterstone	-	-	PASS
	2007 CSEMP 646 Cosheston Point	-	-	PASS
	2007 CSEMP 647 Ynys-hir	-	-	PASS
	2007 CSEMP 648 Bontddu	-	-	PASS
	2007 CSEMP 690 Mostyn	-	-	PASS
K	2007 CSEMP 809 SAC (Green I.)	Rep. B (OS39)	Good	PASS
	2008 CSEMP 845 BL5	Rep. E (OS38)	Good	PASS
	2008 CSEMP BL7	-	-	PASS
	2008 CSEMP 820 BR3	-	-	PASS
	2008 CSEMP 880 Kilderry	Rep. E (OS40)	Good	PASS
	2008 CSEMP 825 IS1	-	-	PASS
L	2007 CSEMP 806 NMP4	-	-	PASS
	2007 CSEMP 807 NMP5	-	-	PASS
	2007 CSEMP 808 Buoy(NMP6)	Rep. B (OS40)	Good	PASS
	2007 CSEMP 815 Buoy(NMP3)	-	-	PASS
	2007 CSEMP 865 NC2 (NMP2)	Rep. B (OS38)	Good	PASS
	2007 CSEMP 875 NC1 (NMP1)	Rep.A (OS39)	Excellent	PASS

Figure 1 - Own Sample (OS) data amendment and submission for CSEMP Samples