MANUELA FINAL WORKSHOP:

REPORT

Hellenic Centre for Marine Research

19-23 May 2008

Nikolaos Lampadariou

Minutes of the MANUELA Final Workshop Meeting in Heraklion

Meeting held at the Hellenic Centre for Marine Research in Heraklion, Greece from 19 to 23 May 2008.

1. Meeting

Attendees:

Ghent University	Jan Vanaverbeke
VLIZ	Leen Vandepitte
HCMR	Nikolaos Lampadariou; Katerina Sevastou; Vicky Kalogeropoulou
NHML	Tim Ferrero; Natalie Barnes
IOPAS DZMB	Barbara-Urban Malinga; Aleksander Drgas Gritta Veit-Koehler; Jutta Kuhnert
U-EVORA	Helena Adão

Not all participating institutes were represented. Local organizer Nikos Lampadariou chaired the meeting.

2. Welcome and setting of agenda

The meeting was called at 9:00 by the local organizer Nikos Lampadariou who welcomed everyone and reviewed the agenda. Since this was the final meeting of the project the agenda was set to:

(a) review the status of all project business

(b) jointly analyze the data from the experimental field action

(c) plan the end of the project and the submission of the final report

The agenda was adopted.

Other matters to be discussed were:

(a) Status of the COST proposal and future action

3. Matters arising from the agenda

3.1. Project Overview:

The project coordinator Jan Vanaverbeke reviewed all the project deliverables. Most of them were either successfully delivered in time or were successfully addressed and will be delivered before the end of the project. The only exceptions were deliverables D10.1 (review paper on large-scale patterns) and D10.4 (review paper on species assembly rules). D10.1 which was led by John Lambshead and Guy Boucher, with the assistance of Nikos Lampadariou, was not met so far because the two leaders, besides the kickoff meeting in Ghent, did not participate actively in any other project activity. It was decided that Tim Ferrero will approach John Lambshead (Guy Boucher has retired in the meantime) in order to explore his willingness to contribute (Action: Tim Ferrero). If John Lambshead would be

unable to contribute to this deliverable, Tim Ferrero and Nikos Lampadariou would explore the possibility to take over the lead (Action: Tim Ferrero and Nikos Lampadariou). It was also discussed that this matter should be maybe combined with the analysis of "Large scale patterns in European Coasts and Estuaries" performed recently by Bea Merckx and Paul Somerfield during a workshop held in Ghent (Action: Jan Vanaverbeke, Bea Merckx and Paul Somerfield). D10.4, which was led by Bea Merckx, could not be met because no assembly rules were found (Action: none).

3.2. Status of review papers:

During previous meetings it was decided that a number of review papers would be submitted to scientific journals as a follow up to the creation of the Manuela Meiobenthic Database and the joint analysis workshop held in Ghent during January 2007. These papers would comprise altogether deliverable D10. Their status is as follows (first parenthesis, leading person):

(a) Deep-sea (Christina) (Delayed): This MS was delayed due to a problem in repeating the patterns of data analysis during the January 2007 meeting. However, during the COMARGE meeting in Ghent (February 2008) members of the writing and analysis group (Ann Vanreusel, Christina Gambi and Nikos Lampadariou) discussed a number of possible ways to overcome the analysis problem. It was decided that Ann Vanreusel would try to repeat the analysis (Action: Ann Vanreusel).

(b) Disturbance (Michaela) (Submitted): This MS was originally submitted to MEPS. However it was rejected, receiving comments which, to the authors opinion, were not fully justified. It was decided that a revised version would be submitted to Marine Biology. MS was successfully submitted in May 2008. (Action: None).

(c) Copepods (Gritta): This MS has been delayed and is still in preparation (Action: Gritta Veit-Koehler).

(d) Size relationships (Jan): Shortly before the meeting, a first draft was sent out to the co-authors for comments. These should be incorporated into the draft before the MS would undergo a final round of data analysis, revision and reevaluation in June (Action: Jan Vanaverbeke and Karline Soetaert).

(e) Artificial neural networks (Bea). A manuscript on predicting nematode diversity using Artificial Neural Networks is being prepared and will be submitted before the end of the summer (Action: Bea Merckx)

(f) Joint experiment (Tim): This MS was excluded from the deadline that was set for all other MS since the experiment, sample analysis and data analysis is still in progress. However, it was decided that the joint experiment would be submitted for oral presentation during the World Marine Biodiversity Conference in Valencia during November 2008. It was decided that a draft MS should be ready shortly after the conference (Action: Tim Ferrero).

(g) Database (Leen): A paper on the database was submitted to Meiofauna Marina. The review report was positive, only minor comments have to be accommodated for. This will be done before the end of the summer (Action: Leen Vandepitte)

3.3. MANUELA database:

During the previous MANUELA meeting it was decided that the database should be reopened to allow inclusion of new datasets and that the database would be closed again during the meeting. Leen Vandepitte presented a short overview of the database, which includes now 85 datasets, 45 of which have been used for the review papers while another 40 have not been used so far. It was recognized that this provides a great opportunity to further explore the data and prepare more review papers or papers on specific questions. The release date of the database was also discussed. It was decided that the final release date should be 3 years after the end of the project, which is in February 2009 (Action: Leen Vandepitte).

3.4. Status of sample analysis from the joint experiment:

Representatives from each of the 4 beaches presented a short overview of the sample analysis status as well as preliminary results from their beach. Sample analysis was completed for the 3 beaches (Arina, Hel and Sinnes) while analysis of samples from De Panne will be completed in July (Action: Jan Vanaverbeke).

4. Analysis of joint experiment data

One of the main tasks of the meeting was to perform preliminary analysis of data from the raining experiment that was carried out in spring 2007. Already existing data were incorporated into a Microsoft Access database and Leen Vandepitte gave an overview of the structure and usage of the database. It was decided that the database should be ready one week after the remaining samples from De Panne beach have been analyzed (Action: Leen Vanderpitte).

In order to explore and efficiently analyze the data, several analysis groups where formed. These groups addressed the following types of analyses: BACI design, multivariate analysis of faunal data, PERMANOVA, analysis of environmental variables, estimation of univariate indexes (diversity, feeding groups etc.), analysis of variance (2-way, 3-way ANOVA etc.). During the last day of the workshop, a number of problems that were encountered during the analyses were discussed. These problems were formed into well defined task and one leading person was assigned to each one of them.

Below follows a short summary of the problems and thereafter the tasks with the leading partners:

4.1. Sampling design:

One of the major questions was “How should the data be analyzed?” Different types of experimental designs, such as BACI, mBACI, mBACIP etc. were explored. It was realized that the most appropriate design which applied to our data was an unbalanced three factor design with the three factors being: a) baci (before, after), b) time (t-1, t0, t1, t4 and t7) and c) treatment (rain, control). The design is an unbalanced design since factor baci has two sampling units as before (t-1 and t0) and three sampling units as after (t1, t4 and t7). Also, time is nested within baci. This type of sampling design proofed problematic (see below PERMANOVA and 2-way ANOVA), therefore it was decided that a detailed report on the sampling design should be produced in order to open the discussion to other members of the MANUELA community that could not attend the meeting (Action: Nikos Lampadariou).

4.2. PERMANOVA:

It was decided that the permutational multivariate analysis of variance (PERMANOVA) is one of the most appropriate ways to analyze the data. Our design [baci x time(baci) x

treatment] is shown in the gray box below:

Factor 1 is baci with 2 levels and is fixed
Factor 2 is time with 3 levels and is fixed
Factor 3 is treatment with 2 levels and is fixed
Factor 2 is nested in factor 1

However, despite the fact that there is a special version of the program designed to run unbalanced models (DISTLM), it proved that it would actually not run our design. Furthermore, we tested two different versions of the program, the original which runs under MS-DOS and the one incorporated as a plug-in into PRIMER. To overcome the problem it was decided to:

(a) Consult a statistician (Action: Tim Ferrero)
(b) Further explore and properly describe the problem in order to contact the author of the computer program with the aim to investigate weather the problem exist due to a bug or due to a problematic design (Action: Katerina Sevastou)
(c) Open the discussion on the sampling design and data analysis model to other members of the MANUELA consortium who actively participated during the design of the experiment and who could not attent the meeting (Action: Jan Vanaverbecke)

4.3. Two-way ANOVA:

The problem on the three factor design described above applies also to ANOVA. We could not find a way to perform a 3-way unbalanced ANOVA. It was decided to further explore this problem (see above) and alternatively, if the unbalanced 3-way model is not correct, use a 2-way ANOVA with time and treatment as factors (Action: Jan Vanaverbecke).

4.4. 2nd MDS:

The aim of the 2nd stage MDS analysis was to explore if nematode communities (i.e. T7's) converge towards the end of the experiment. Input similarity matrices were time x beach. So far analysis done on three beaches and To, T1, T4 and T7 (Action: Natalie Barnes).

4.5. Feeding Types:

Check if feeding types as assigned during the workshop are correct for the individual beaches. Repeat the same analysis for other univariate indexes (need to decide on the ANOVA model first!) (Action: Tim Ferrero).

4.6. Environmental data:

Regarding the environmental data, the following points should be considered (Action for all: Barbara-Urban Malinga; Aleksander Drgas)

(a) Run PCA analysis for individual beaches by using the following variables: salinity as Sum's over the core; org. carbon; granulometry as the mean and not the median and % coarse sand.
(b) Run BIOENV by using the same variables as above.
(c) Make vertical profiles of salinity for all beaches similar to Jutta's presentation for Arina.
(d) Perform multivariate analysis of environmental data (MDS) using slices as

"species" and by using euclidean distances.

(e) Graphs should be given only for the vertical profiles of salinity. All other environmental data should be presented in tables and/or stats.

(f) For salinity use a deviation measure to show how salinity changes vertically in th core.

4.7. Further sample analysis:

For one beach only (Arina) one additional set of samples has been analyzed (T9). It was therefore discussed if T9 should or could be analyzed from the other three beaches as well. It was decided that this was not possible taking into consideration the budget and time limitations. However, since there is a great possibility that Jutta Kuhnert might be employed by DZMB this summer, DZMB offered the allocation of a few person months to analyze these samples (Action: Jutta Kuhnert).

5. Tasks

For the different types of analysis the following leading persons were identified:
(a)Experimental design (Nikos)
(b)Database (Leen)
(c)Analysis of environmental variables (Basia)
(d)Estimations of univariate measures (Jan)
(e)Feeding types (Tim)
(f)ANOVA for univariate indices (Jan)
(g)Multivariate analysis (Gritta)
(h)2nd stage MDS (Natalie)
(i)PERMANOVA (Nikos)

6. Deadlines

All partners recognize that timing is critical for the successful completion of the project. Therefor e the following deadlines were agreed among all participants:

(a)Report on Experimental Design: (3 June) (Action: Nikos Lampadariou)
(b)Final Workshop minutes: (10 June) (Action: Nikos Lampadariou, Jan Vanaverbeke)
(c)Decision on T9 analysis: (31 June) (Action: Jutta Kuhnert)
(d)DePanne data: (15th July) (Action: Jan Vanaverbeke)
(e)Final version of database: (One week after No. 4) (Action: Leen Vandepitte)
(f)Decision on Experimental design: (8 September) (Action: All MANUELA partners)
(g)Analysis report from Task Leaders: (8 October) (Action: Task Leaders)
(h)First draft of experiment paper: (10 December) (Action: Tim Ferrero)
(i)Final MANUELA Report: (?) (Action: Jan Vanaverbeke)

7. Other business

7.1. COST proposal

The proposal got rejected, negative commends where: no science only website! There is a new deadline (26th of September) and we discussed the possibility to resubmit the proposal (Action: Jan Vanaverbeke).