



Accessing and developing the required biophysical datasets and data layers for Marine Protected Areas network planning and wider marine spatial planning purposes

Report No 13: Task 1B. Translation of Habitat Maps (Phase 2)

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Report No 13: Task 1B. Translation of Habitat Maps

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Executive Summary

The UK is committed to the establishment of a network of marine protected areas (MPAs) to help conserve marine ecosystems and marine biodiversity. MPAs can be a valuable tool to protect species and habitats and can also be used to aid implementation of the ecosystem approach to management, which aims to maintain the 'goods and services' produced by the healthy functioning of the marine ecosystem that are relied on by humans.

A consortium¹ led by ABPmer have been commissioned (Contract Reference: MB0102) to develop a series of biophysical datalayers to aid the selection of a network of Marine Conservation Zone (MCZ) in England and Wales (and the equivalent MPA measure in Scotland) under the Marine and Coastal Access Bill. Such datalayers would also be of use in taking forward marine planning in UK waters. The overall aim of the project is to ensure that the best available information is available for the selection of MPAs in UK waters, and that these datalayers can be easily accessed and utilised by those who would have responsibility for selecting sites. The project has been divided into a number of discrete tasks, one of which is the translation of habitat maps.

The aim of this work package (Task 1B) was to translate a series of habitat maps from their current habitat classification to their appropriate EUNIS 2007 type and process them to the Mapping European Seabed Habitats (MESH) data exchange format. In addition the second phase of this work package included the translation of a number of sample points that are stored in Marine Recorder from the Marine Nature Conservation Review (MNCR) 97.06 classification to the equivalent MNCR 04.05 biotope code. This report provides a documented record of the steps that have been undertaken in the second phase of Task 1B.

¹ ABPmer, MarLIN, Cefas, EMU Limited, Proudman Oceanographic Laboratory (POL) and Bangor University

1. Introduction

- 1.1 The UK is committed to the establishment of a network of marine protected areas (MPAs) to help conserve marine ecosystems and marine biodiversity. MPAs can be a valuable tool to protect species and habitats and can also be used to aid implementation of the ecosystem approach to management, which aims to maintain the 'goods and services' produced by the healthy functioning of the marine ecosystem that are relied on by humans.
- 1.2 As a signatory of OSPAR the UK is committed to establishing an ecologically coherent network of well-managed MPAs. The UK is already in the process of completing a network consisting of Special Areas of Conservation (SACs) and Special Areas of Protection (SPAs), collectively known as Natura 2000 sites to fulfil its obligations under the EC Habitats Directive (92/43/EEC). Through provisions in the Marine and Coastal Access Bill a new network of Marine Conservation Zones (MCZs) would be designated in England and Welsh territorial waters and UK offshore waters. The Scottish Government is also considering equivalent Marine Protected Areas (MPAs) in Scotland. These sites are intended to help to protect areas where habitats and species are threatened, and to also protect areas of representative habitats. For further information on the purpose of MCZs and the design principles to be employed see [<http://www.defra.gov.uk/marine/biodiversity/marine-bill/guidance.htm> Defra, 2009].
- 1.3 MCZ selection would be undertaken via a participatory stakeholder engagement approach. Four Regional MCZ Projects have been established to lead this process, and have been identified as the principle 'customer' of any WebGIS system established. The Regional MCZ Projects are being established during the latter half of 2009, and are expected to be fully functional by early 2010. The full stakeholder engagement process is anticipated to begin in February 2010, continuing until the end of 2011. A formal public consultation is expected in 2012.
- 1.4 Selection of MPAs should be based on the best available data and would come from a range of sources including biological, physical and oceanographic characteristics and socio-economic data such as the location of current activities. To ensure such data are easily available to those who would have responsibility for selecting sites Defra and its partners² commissioned a consortium¹ lead by ABPmer and partners to take forward a package of work. New Geographical Information System (GIS) datalayers to be developed included:
- Geologic al and geomorphological features;
 - Listed habitats;
 - Fetch and wave exposure;

² Joint Nature Conservation Committee (JNCC), Countryside Council for Wales (CCW), Natural England (NE), Scottish Government (SG), Department of Environment Northern Ireland (DOENI) and Isle of Man Government.

- Marine diversity layer;
- Benthic productivity; and
- Residual current flow.

1.5 In addition to the development of data layers, there is a need to ensure such information can be easily accessed through a webGIS given the participatory nature of the MCZ process that is currently being planned. This report (Task 1B) provides a documented record of the steps that have been undertaken in the second phase of Task 1B. This has included the translation of four habitat maps and 2517 samples as well as the revisiting of three habitat maps that were translated within Phase 1. Ma rLIN were responsible for the habitat translation and formatting elements of the work (Section 2). ABPmer provided a confidence assessment of the four habitat maps based on the methodology provided within MESH (Section 3).

2. Habitat Translation Method

2.1 Habitat maps

- 2.1 MarLIN were supplied with four shapefiles of habitat data within Phase 2 and revisited three shapefiles from Phase 1 which required further investigation (see Appendix A). Each distinct original habitat was extracted from the shapefiles provided and put into a Microsoft Access database. The Access database also contained the data specification outlined in the Translate to MESH Data Exchange Format (DEF) including detailed translation and validation comments. The original reports for each survey were collated and used to supplement the information provided in the GIS legends. Each original habitat was manually checked, via the process outlined in Figure 1.
- 2.2 In some cases, particularly coarse scale 'life form' classifications from acoustic surveys, the original habitat type represented a number of European Nature Information Systems (EUNIS) habitats. It was not appropriate in most cases to create new interim EUNIS codes for these habitats as they did not represent a true habitat mosaic. In such cases the EUNIS level habitats that represented all habitats outlined in the data was selected. Where the mix of habitats was such that only a EUNIS level 1 code (A) was possible the EUNIS code was not assigned.
- 2.3 The translations involved a considerable amount of interpretation and as such ten percent of records were Quality Assured (QA) by a marine biologist expert. The focus of QA was on habitats that were only identified to a coarse level (levels 2-4) as the translation of level 4-5 habitats was more straightforward.
- 2.4 Following the QA process the data was transferred into the shapefiles supplied to MarLIN and translated data added. Where present, overlapping polygons were identified using a GIS program developed by ABPmer. Overlapping polygons were identified in the VAL_COMM field.

2.2 Points data

- 2.5 Point data, with MNCR 97.06 biotope codes, was extracted from the Marine Recorder database for translation into the respective MNCR 04.05 biotope codes. Where codes translated directly a simple translation was made. Where codes did not directly translate the biotope was determined by referring to the habitat (biotope) and species information stored in the JNCC marine recorder snapshot and by referring to reports where available. However, full habitat or species information was not available for all sample points. Important information such as salinity, depth or sediment type was not available from a number of sample points. Where possible salinity was inferred by plotting estuarine locations against a satellite map to look at position in estuary and whether there were any other freshwater influences. In some cases a sample-reference related to several different biotopes and the species list was aggregated, making it difficult to work out which species related to each biotope. As such the biotopes were assigned based on all of the available

Table 1: Method used to translate each of the sample points

Method	Count
Direct translation from one code to another	1663
Translation with reference to original reports to clarify a code split or amalgamation	3
Review original species and physiographic data and assign biotope	851
Total	2517

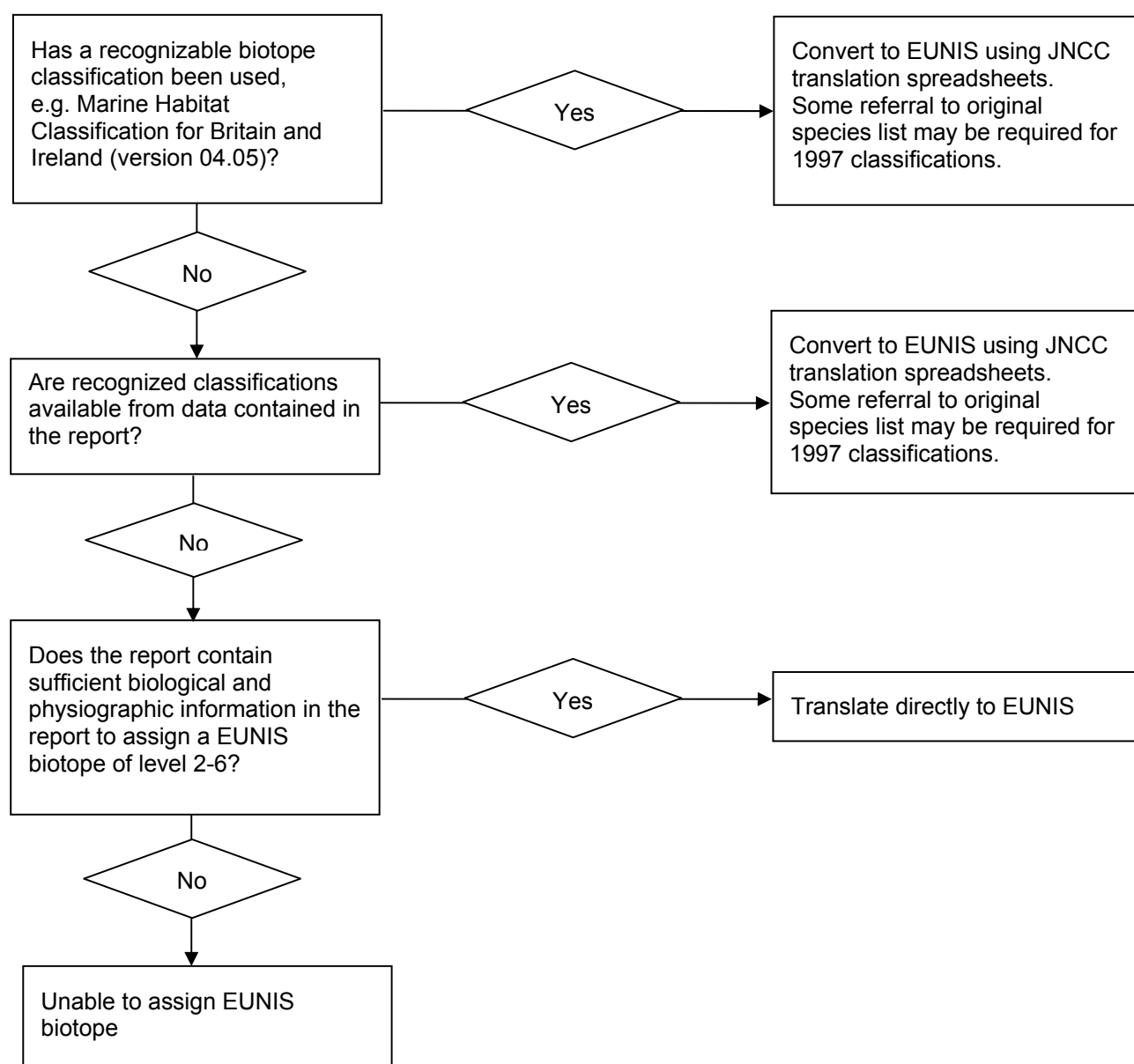


Figure 1: Flow chart showing the process of habitat translation

3. Confidence Assessment Method

- 3.1 The confidence assessment used the methodology that was developed within the MESH project (MESH 2007a); this evaluation process addresses three main questions:
1. How good is the remote sensing?
 2. How good is the ground truthing?
 3. How good is the data interpretation?
- 3.2 A guide to the development and use of the confidence assessment can be found within the outputs of the MESH project website ([MESH, 2007b](#)).
- 3.3 The confidence assessment can only be undertaken if there is sufficient supporting information to accompany the habitat map. This includes a documented record of the survey techniques, post processing and analysis as well as any QA steps that have been undertaken. This limited the number of maps for which a confidence assessment could be undertaken within Phase 2 of Task 1B to two.
- 3.4 The confidence assessment score that was assigned to the habitat maps can be found in Appendix B1. Similarly the confidence assessment score that was attributed to each of the three maps that were revisited from phase 1 has been included in Appendix B2.

4. Conclusions

- 4.1 This technical report provides a record of the habitat maps and sample points that have been translated and formatted in the second phase of Task 1B. The methodologies that have been used to produce the revised biotope classifications have been documented along with details of the confidence assessment process. In addition the outputs of the confidence assessment for the four habitat maps have been recorded within this document.

Abbreviations

ABPmer	ABP Marine Environmental Research Ltd
Cefas	Centre for Environment, Fisheries and Aquaculture Science
DEF	Data Exchange Format
Defra	Department for Environment Food and Rural Affairs
EMU EMU	Ltd
EUNIS European	Nature Information Systems
GIS	Geographic Information System
JNCC	Joint Nature Conservation Committee
MarLIN	The Marine Life Information Network
MCZ	Marine Conservation Zone
MESH	Mapping European Seabed Habitats
MNCR	Marine Nature Conservation Review
POL	Proudman Oceanographic Laboratory
QA Quality	Assured
SAC	Special Areas of Conservation
SPA	Special Protection Area

References

Defra, 2009. Draft Guidance note on 'Selection and designation of Marine Conservation Zones' (Note 1). Published by the Department for Environment, Food and Rural Affairs and the Welsh Assembly Government, May 2009.

MESH, 2007a. MESH Confidence assessment. Website accessed in August 2009. <http://www.searchmesh.net/default.aspx?page=1635>

MESH, 2007b. MESH (2007b) MESH Confidence Assessment Guidelines. Website accessed in August 2009.

<http://www.searchmesh.net/docs/MESH%20Confidence%20Assessment%20Guidelines.doc>

Acknowledgements

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Appendix A. Habitat Maps in Phase 2 of Task 1B

Appendix A1. Habitat Maps Translated in Phase 2 of Task 1B

Globally unique ID	Dataset title	Geographic location of dataset
GB000942	Chichester Harbour intertidal vegetation survey 2005	Eastern Channel
GB000978	Collated <i>Zostera</i> habitat boundaries for Wales - GIS dataset	Wales
GB000979	Collated Saltmarsh habitat boundaries for Wales	Wales
GB000980	Lyme Bay biotope map	Western Channel

Appendix A2. Habitat Maps Revisited in Phase 2 of Task 1B

Globally unique ID	Dataset title	Geographic location of dataset
GB000289	MNCR Area Summaries - Sealochs in the Outer Hebrides	Scottish Continental Shelf
GB000291	MNCR Area Summaries - Lagoons in Shetland and Orkney	Scottish Continental Shelf
GB000292	MNCR Area Summaries - Lagoons in the Outer Hebrides	Scottish Continental Shelf

Appendix B. Confidence Assessment Scores

Appendix B1. Confidence Assessment Scores – Phase 2

Globally unique ID	Remote technique	Remote coverage	Remote positioning	Remote stds applied	Remote vintage	Bgt technique	Pgt technique	Gt positioning	Gt density	Gt stds applied	Gt vintage	Gt interpretation	Remote interpretation	Detail level	Map accuracy	Remote score	Gt score	Interpretation score	Overall score
GB000942	3	3	3	1	3	2	0	3	1	1	3	2	3	2	1	87	60	67	71
GB000978	No report available																		
GB000979	No report available																		
GB000980	0	0	0	0	0	2	0	2	1	1	3	2	0	2	1	0	55	42	32

Appendix B2. Confidence Assessment Scores – Revisit Phase 1

Globally unique ID	Remote technique	Remote coverage	Remote positioning	Remote stds applied	Remote vintage	Bgt technique	Pgt technique	Gt positioning	Gt density	Gt stds applied	Gt vintage	Gt interpretation	Remote interpretation	Detail level	Map accuracy	Remote score	Gt score	Interpretation score	Overall score
GB000289	0	0	0	0	0	3	3	2	2	2	1	3	0	2	1	0	75	50	42
GB000291	0	0	0	0	0	3	3	2	2	2	1	3	0	2	1	0	75	50	42
GB000292	0	0	0	0	0	3	3	2	2	2	1	3	0	2	1	0	75	50	42