The one-hundred-and-first meeting of the Joint Nature Conservation Committee to be held at 0900 hours on 20 November 2014, at JNCC, Monkstone House, City Road, Peterborough, PE1 1JY

This paper was provided to the Joint Committee for decision. Please refer to the minutes of the meeting for Committee's position on the paper.

Joint Nature Conservation Committee

UK marine habitat classification development

Paper by Helen Ellwood

1. Background

1.1 A habitat classification is a hierarchical system for differentiating between habitat types based upon their physical and biological features. A successful classification is characterised by being used to the exclusion of other comparable classifications by the constituencies with an interest in that part of the environment. This happens because they enable consensus over 'what there is', and enable effort and resources to be focussed on locating, understanding and managing pressures on it. As such, a good classification requires both a credible scientific basis and an effective mechanism for achieving consensus on adopting amendments.

1.2 JNCC is the custodian of the *Marine Habitat Classification for Britain and Ireland* (hereafter referred to as "the Classification"), which was originally developed by the JNCC's Marine Nature Conservation Review as part of the EC Life Nature-funded BioMar project (*Connor et al* 1997a, b). The system was the first of its kind in Europe. It formed the basis of the marine component of the Europe-wide classification system, EUNIS, in 2004.

1.3 At its most simple, each sample or set of samples (e.g. grabs, video) is categorised by habitat[1] based on biological features, such as species assemblages, and physical features, such as substrata and other environmental characteristics. By referring to pre-defined habitat descriptions within the Classification a picture of the wider environment can develop.

1.4 The Classification is widely used by Government bodies, academic institutions, the private sector and NGOs as a system for the consistent description of habitat types. It provides:

i. the ability to map habitats to assess their extent and geographical distribution;

ii. categories for the assessment of the state (condition and trend) of marine biological communities and the basis for monitoring sample allocation;

iii. the ability to assess the nature conservation value of habitats at specific locations, such as in the identification of marine protected areas (MPAs) and the licensing of industry activities;

iv. the ability to assess the extent of protection afforded to habitat 'stock' by existing and proposed MPAs and wider measures.

[1] Strictly speaking, 'habitat' refers to physical characteristics and 'biotope' is a combination of biological and physical characteristics. However, in practice 'habitat' is also used as a general term referring to both.

1.5 The Classification was last updated in 2004. Since then and up to 2012 JNCC received a significant number of requests to improve the Classification. These requests rightly identified weaknesses in some areas such as completeness (shallow and deep sea) and structure (see JNCC report 529 (Parry 2014)). In the absence of a response from JNCC, others developed their own parts of the Classification for individual research projects. These developments have been valuable scientific progress, but they lacked any mechanism for exposing them across the marine community, testing them against other proposals and achieving consensus on a formal amendment to the Classification. The result was that the Classification was diverging as it evolved piecemeal, and so ceasing to be an effective classification. The implications, that would have worsened over time, were that conservation effort would have stalled at the question 'what is there?' Competing and partial classifications would be evidence that the conservation community has low confidence in understanding the natural assets that conservation and sustainable use measures are intended to conserve.

1.6 Since 2012 JNCC has employed a member of staff who is responsible for the maintenance and updates of the Classification system, addressing the range of issues highlighted by users. The following sections of the paper describe the uses of the Classification, progress made in its revisions and future plans for developing the Classification.

2. Practical uses of the Classification

2.1 The value of a common language for describing marine habitats is demonstrated through the variety of users of the Classification, including policy makers, statutory advisers, industry bodies and regulators. For example:

i. contractors and statutory nature conservation bodies conducting surveys in the inter-tidal and near-shore environment use JNCC's standard data forms to record their data, which allows them to classify the habitats they encounter in a standard way;

ii. development in the marine environment is growing. Industry bodies and consultants continue to look to JNCC for standard procedures and use the Classification as the basis for their licence application submissions to regulators and advisors. A common language streamlines the provision of advice, leading to better conservation outcomes;

iii. a common Classification allows the development of marine conservation policy by allowing data from disparate sources to be compiled and assessed in the same way.

3. Revising the deep-sea section

3.1 The deep sea (below 200m) covers around 60% of UK waters. Conservation effort has increased here greatly in the last ten years yet the original Classification had no deep-sea section. The result has been a move towards using the EUNIS classification system's deep-sea section, which is deemed inadequate in its current state by the user community (Galparsoro *et al* 2012).

This is due to the incomplete range of broad physical habitats and number of biotopes described.

3.2 Among those Member States with deep-sea areas, the UK and France have had the most capacity for developing such a scheme. As a result of the UK's larger deep-sea area, the amount of new data available and its historical involvement in EUNIS, JNCC have taken the first steps towards improving the classification of deep sea habitats.

3.3 JNCC has collaborated with the UK's leading experts in deep-sea ecology to produce a paper that outlines categories for environmental factors, broad community types and specific biological assemblages to be used to classify deep-sea habitats.

3.4 This paper was amended and agreed amongst deep-sea experts at a workshop in April 2014; the paper is now with an external group of marine ecology experts for a final review and will be published on the JNCC website by the end of December 2014 (Parry, in draft).

3.5 JNCC has striven to ensure a result that is accepted by experts and potential users. This has been achieved through:

i. building upon pre-existing work;

ii. collaborating with experts in the UK and across Europe;

iii. designing a structure that addresses the general user issues outlined in Parry (2014).

3.6 Using this work, JNCC is taking an active role in influencing the parallel development of the European marine classification system, EUNIS. As a result of JNCC's input to this process, the new version of EUNIS is likely to adopt the UK's deep-sea classification structure. This will lead to greater consistency across national borders, a requirement of the Marine Strategy Framework Directive.

4. Defining new biotopes

4.1 The Classification is relatively strong and complete for areas where there is lots of data, such as the inter-tidal and near-shore environments. However, when it was last revised in 2004 there were very limited data for areas further offshore – referring to areas between around 50 and 200m deep (accounting for 60% of the non-deep sea area). These gaps in coverage mean that users cannot always classify a sample because their data do not match any pre-defined biotope definitions.

4.2 In recent years there have been many more surveys in these waters due to the requirements for offshore MPA designation (including Special Areas of Conservation, Marine Conservation Zones and Nature Conservation MPAs).

4.3 The assumption is that the large amount of new data will allow JNCC to fill some of the gaps in the Classification for offshore waters. A new project has now begun to reanalyse all non-deep-sea sub-tidal data to identify new, unique biotopes.

4.4 Work began in September 2014 and is being steered by group made up of representatives from the statutory nature conservation bodies, Marine Scotland Science and Cefas, who are enthusiastic about contributing to these developments. The aim is for this work to be completed in 2015.

5. Revising the structure

5.1 Parry (2014) identified that the majority of issues that users have with assigning biotopes using the Classification stem from fundamental limitations of its hierarchical structure, which tie certain communities to specific environmental conditions, e.g. sediment type and depth.

5.2 This leads to a common situation where data fits either the biological community or the physical conditions described in a biotope but not both, causing data to be 'shoe-horned' into an ill-fitting biotope. This can lead to incorrect assumptions being made about either the physical characteristics or biological communities at a site.

5.3 Parry (2014) makes several recommendations for revisions to the arrangement and naming of biotopes and habitats in the Classification to address these issues.

5.4 It is likely that the identification of new biotopes (see section 4 of this paper) will provide further justification for certain structural changes by highlighting the extent to which habitat groupings are biologically relevant.

5.5 Any structural changes need to be considered carefully due to the potential implications, including:

i. confusion and/or disapproval among users;

ii. the time required to translate existing maps and samples to a new system.

5.6 This work, including determining the scope, is scheduled to begin in 2015.

6. Conclusions and recommendations

6.1 JNCC fulfils a unique role in the UK by maintaining and developing a system for classifying marine habitats and biotopes. This work has important effects on the quality of our marine evidence.

6.2 Furthermore, JNCC is influential in the development of the EUNIS Classification system as a result. This places the UK in a constructively influential place in respect of regional implementation of the Marine Strategy Framework Directive and of streamlining reporting and assessment.

6.3 After many years in abeyance, in response to user desires, and recognising the importance of the UK in deep-sea conservation amongst EU Member States, since 2012 JNCC has allocated dedicated resources for the maintenance and updating of the Classification. This has already resulted in noticeable improvements and approval from the statutory nature conservation bodies. In addition, we know that a rigorous and tested classification with regular and transparent updates provides an essential base of information for

industry, regulators and consultants in order that they can structure their information in ways that, for example, streamline licensing processes.

7. References

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