

# THE CONCEPT OF CLASSIFYING THE MARINE ENVIRONMENT INTO ECOLOGICAL UNITS AND ITS APPLICATION IN THE IRISH SEA PILOT

## 1. Introduction

- 1.1 A key element of the 'Implementation Framework' is the concept of tailoring the nature of human use of the marine environment to the particular character of its large-scale ecological components.
- 1.2 This concept was, in part, inspired by work undertaken in Canada (Roff and Taylor, 2000) which uses geophysical information as a proxy for biological information in order to develop a classification for marine environments. This approach is potentially well suited for areas away from the coastline where biological information is likely to be lacking, and/or where the regulation of human activity needs to be addressed at the relatively large scale.
- 1.3 Roff and Taylor considered that the concept could be applied to the water column (using parameters such as water temperature, depth/light, and stratification/mixing regime), and also to the seabed (using parameters such as water temperature, depth/light, substrate type, exposure/slope). They termed the marine components identified by this classification as marine habitat types or 'seascapes'.
- 1.4 When the 'Implementation Framework' was discussed by the RMNC, objection was raised to the adoption of the 'seascape' term because it had been used in other contexts. The term used for the purposes of the Irish Sea Pilot is seabed types or 'Ecological Units', but the concept is the same. A draft list of ecological units and a map of their distribution in the Irish Sea is included in this paper.

## 2. Role of Ecological Units

- 2.1 The 'Implementation Framework' envisages conservation action at a range of scales, namely:
  - i. **the whole of the Regional Sea and adjacent waters**  
here, conservation action will be directed towards ensuring the adequate regulation of human activity which could impact on the general condition of the sea, for example in order to maintain or restore water quality at/or to desired levels, or to avoid shipping accidents;
  - ii. **the Ecological Unit/Seascape scale**  
here, conservation action will be aimed at regulating human activity in a way which is tailored to the relative sensitivity to damage of the seabed topography and substrate, and also to the relative sensitivity to alteration or disturbance of particular water column characteristics (such as frontal systems);

iii. **the site scale**

here, conservation action will be aimed at ensuring that areas which are of high value for biodiversity are maintained in this condition for the future. In these areas, human activity is likely to be closely regulated. In general, such are likely to be modest in size;

iv. **the species scale**

here, conservation action will aim to regulate human activity which could harm important species, including mobile species, whose needs are not met by action taken under the other scales.

2.2 It will not be possible to achieve our overall aim of maintaining the wealth and range of biodiversity naturally characteristic of a Regional Sea only through action at the Regional Sea, site and species scales. Sites are only likely to comprise a small proportion of the total sea area (usually less than 10%), and conservation measures at the Regional Sea and species scales will not cover the all necessary habitat maintenance and support functions. The role of action at the Ecological Unit scale is to fill that gap.

2.3 The concept of the Ecological Unit is based on the assumption that one will be able to ascertain (or predict) the biological communities characteristic of a particular Ecological Unit, assess its degree of susceptibility to damage as a result of various types of human activity, and prescribe a management regime which will allow the Unit to make its desired contribution to maintaining the wealth and range of biodiversity of the Regional Sea over time.

2.4 It will be seen from the above, that the following work needs to be carried out to enable the role of Ecological Units, as envisaged in the 'Implementation Framework', to be realised. Namely:

- i. the essential hydrographic information needs to be analysed to identify and map the main types of Ecological Unit;
- ii. the biological communities characteristic of each type of Ecological Unit will need to be ascertained (if biological information is available or can be obtained), or predicted, at least in broad terms (if not);
- iii. the susceptibility of the Ecological Units (and their biological communities) to harm as a result of human activities needs to be ascertained to the extent practicable, or predicted on the basis of best available knowledge and understanding;
- iv. management regimes need to be prescribed for the various types of Ecological Unit which will enable human activity to continue to the extent that the Unit does not degrade over time and it continues to maintain its contribution to the wealth and range of biodiversity in the Regional Sea;
- v. the management regime needs to be implemented.

### **3. Work on Ecological Units under the Irish Sea Pilot**

- 3.1 The work which is being carried out as part of the Irish Sea Pilot is following the outline summarised in 2.4 above.
- 3.2 To date the Pilot has analysed the essential hydrographic information and produced a draft set of Ecological Unit types for the Irish Sea.
- 3.3 By the end of March 2003, the Pilot expects to have ascertained the biological communities of each type of Ecological Unit to the extent that is possible from the available biological data. Where data is insufficient to do this, a best prediction will be made.
- 3.4 During the summer of 2003, insofar as resources and practicality permit, the Pilot will carry out some further survey work to validate the assessments and predictions made as a result of 3.3 above, concentrating such survey on areas and Ecological Unit types where biological information is lacking. It is hoped that this work will enable the Pilot to identify confidence limits to its predictions that can be applied to other areas of the Regional Sea, and, potentially, to other UK Regional Sea of similar character.
- 3.5 Between March and July 2003, the Pilot will be carrying out work to assess the conservation needs of the various types of Ecological Unit through its work on assessing sensitivity to harm from human activities and the setting of conservation objectives.
- 3.6 During the summer of 2003 this work will move on to identifying the types of management regime which would be appropriate to meeting the conservation objectives, and to what extent current legislation, Governance and enforcement mechanisms can deliver these regimes. It is aimed to complete this work by September 2003.

#### **Map showing ecological units of the Irish Sea.**

A draft map of ecological units of the Irish Sea using physical data as at 10 January 2003 is included. This map will be developed further as ecological data becomes available.

