



## Marine geoconservation in the United Kingdom

Cynthia V. Burek<sup>a</sup>, Neil V. Ellis<sup>b</sup>, David H. Evans<sup>c,\*</sup>, Malcolm B. Hart<sup>d</sup>, Jonathan G. Larwood<sup>c</sup>

<sup>a</sup> Department of Biological Sciences, University of Chester, Parkgate Road, Chester CH1 4BJ, United Kingdom

<sup>b</sup> Joint Nature Conservation Committee, Monkstone House, City Road, Peterborough, Cambridgeshire PE1 1JY, United Kingdom

<sup>c</sup> Natural England, 3rd Floor, Touthill Close, City Road, Peterborough PE1 1UA, United Kingdom

<sup>d</sup> School of Geography, Earth & Environmental Sciences, Plymouth University, Drake Circus, Plymouth PL4 8AA, United Kingdom

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### ABSTRACT

Although the conservation of geological and geomorphological features is a well-established practice in the UK, the conservation of such features in the marine environment has been largely ignored until recently. The provisions made for conserving biodiversity in The Marine and Coastal Access Act 2009 and Marine (Scotland) Act 2010 provide for the conservation of geological and geomorphological features, whilst similar provisions are currently going through the Northern Ireland Assembly in the Northern Ireland Marine Bill. The importance of such features within the marine environment, their interactions with biological features and processes and their value in complimenting terrestrial features, particularly in relation to our understanding of events during the Quaternary, are explored. Opportunities for the conservation of these features under the Marine and Coastal Access Act 2009 are reviewed in particular, as are a range of methodologies for their identification. The use of stakeholder groups in the selection and inclusion of these features in English inshore and offshore, and Welsh offshore areas are discussed. Some of the challenges that emerged during this process are highlighted, in particular that of communicating an understanding of the significance, value and vulnerability of geological and geomorphological features. The development of coastal access in England and Wales provides opportunities for improving public understanding of geology and geomorphology in the marine environment through its promotion and interpretation on the coast. This and other initiatives that raise awareness of these features may provide future support for their inclusion in any future revision of Marine Conservation Zones.

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## 1. Introduction

Until now, geological and geomorphological conservation has been a well-established activity in the terrestrial environment, but has been largely absent in the marine environment (Prosser, 2013). The Marine and Coastal Access Act 2009 introduced a new planning system for the marine environment which, amongst other features, makes provision for the designation of Marine Conservation Zones (MCZs) for English and Welsh inshore waters and offshore waters around the UK, whilst enabling public access to be established along the length of the English and Welsh Coasts. Both these aspects of the Act provide opportunities for extending geological conservation into the marine environment and for promoting the coastline as an environment for experiencing and learning about geology and geomorphology at first-hand. Scottish

and Northern Irish inshore waters are addressed by those countries own legislation.

This paper reviews some of the activities that have arisen in relation to the inclusion of geological and geomorphological features within English and Welsh MCZs as well as for the promotion of geodiversity (Gray, 2004) through increased coastal access. In particular, it attempts to identify significant lessons from the process so far, and indicate some opportunities for the future.

## 2. Marine Protected Areas (MPAs) – international and UK legislation

In the UK, several types of marine protected areas exist (Table 1). Although largely focussed on wildlife, some offer opportunities to protect marine geodiversity.

The designation of SSSIs has been important in affording protection to geological and geomorphological features down to mean low water, whilst SACs and Ramsar sites implicitly protect some of these features as they are key to supporting some marine habitats. Since geology and geomorphology are specifically referred to in the legislation, the creation of a coherent network of MCZs (England and Wales) and MPAs (Scotland) offers the

\* Corresponding author. Tel.: +44 (0) 3000600899.

E-mail addresses: [c.burek@chester.ac.uk](mailto:c.burek@chester.ac.uk) (C.V. Burek), [neil.ellis@jncc.gov.uk](mailto:neil.ellis@jncc.gov.uk) (N.V. Ellis), [david.evans@naturalengland.org.uk](mailto:david.evans@naturalengland.org.uk) (D.H. Evans), [m.hart@plymouth.ac.uk](mailto:m.hart@plymouth.ac.uk) (M.B. Hart), [jonathan.larwood@naturalengland.org.uk](mailto:jonathan.larwood@naturalengland.org.uk) (J.G. Larwood).

**Table 1**

Designations, partially or completely covering the marine environment where geological and geomorphological features may exist as a component supporting the biological interest and are not overtly part of the designation (\*), or are designated as features in their own right (+). The term 'Marine Protected Area' (MPA) is an umbrella term for all protected marine areas, but has legal status only in Scotland.

| Designation                                    | Empowering legislation or convention  |
|--|---|
| Marine Conservation Zones (MCZs)**             | Marine and Coastal Access Act 2009  |
| Marine Protected Areas (MPAs)**                | Marine (Scotland) Act 2010  |
| Sites of Special Scientific Interest (SSSIs)** | Wildlife and Countryside Act 1981 (as amended). (Schedule 13 of the Marine and Coastal Access Act has amended the 1981 Act to enable land below mean low water to be notified as an SSSI in England and Wales.) |
| Areas of Special Scientific Interest (ASSIs)** | Nature Conservation and Amenity Lands (Northern Ireland) Act 1985. Limited to land above mean low water.  |
| Special Areas of Conservation (SACs)*          | European 'Habitats Directive' (Council Directive 92/43/EEC of 21 May 1992)  |
| Ramsar sites*                                  | Convention on Wetlands of International Importance 1971   |
| Marine Nature Reserves*                        | Superseded by MCZs  |

greatest opportunities for conserving such features in the marine environment. The Marine and Coastal Access Act 2009 also makes provision for the subtidal extension of SSSIs (Table 1).

### 2.1. Marine Protected Areas – non-statutory protection

The initiation of the Regionally Important Geological/Geomorphological Sites (RIGS) programme in 1990 (Harley, 1994; Whiteley and Browne, 2013) facilitated the protection of geological and geomorphological sites through planning guidance. Thus many Local Sites (geological) on the coast benefit from a degree of protection, although they do not have statutory protection. The recent completion of a RIGS audit in Wales (Burek, 2012) provided information that was used in the Irish Sea area to help inform the identification of coastal MCZs.

### 2.2. Marine Protected Areas network

The UK has signed up to several international agreements that aim to establish an ecologically coherent network of MPAs (e.g. The Bergen Statement: Ministerial Meeting of the OSPAR Commission, Bergen: 23–24 September 2010). The European Union Marine Strategy Framework Directive aims to achieve “Good Environmental Status” (GES) for European Seas by 2020 and sets out eleven high level descriptors for achieving GES. Marine Conservation Zones will contribute to the achievement of GES through the protection of nationally important marine wildlife, habitats, geology and geomorphology, and can be designated anywhere in English and Welsh inshore areas, and UK offshore areas (Fig. 1). Sites are selected primarily to protect a representative range of marine wildlife as well as rare and threatened features. Unlike other UK nature conservation legislation (e.g. Wildlife and Countryside Act 1981 [as amended]), the approach to designation is radically different, as social and economic factors can be taken into account during the selection process. The process for selecting sites involved the participation of key stakeholders in the marine environment.

MCZ recommendations for English inshore waters and English, Welsh and Northern Irish offshore waters were delivered through four MCZ regional projects (Fig. 1): Finding Sanctuary (south-west); Irish Sea Conservation Zones (Irish Sea); Net Gain (North Sea); Balanced Seas (south-east). Each regional MCZ project was delivered through a stakeholder group representing a variety of different interests and activities in the region. Each regional stakeholder group was tasked with using the guidance on MCZ selection combined with the best available scientific evidence to select MCZs within their region (Natural England and Joint Nature Conservancy Committee 2010). The composition and use of regional stakeholder groups was designed to build understanding, support and ownership of the proposals.

Welsh inshore waters (within 12 nautical miles of the coast) are being addressed by the Welsh Government who have announced

the first consultation exercise with 10 potential sites, of which 3 or 4 may become MCZs.

A Marine Bill for the Northern Ireland inshore region has been introduced to the Northern Ireland Assembly (Department of the Environment, 2010) and contains proposals for the establishment of MCZs for the purpose of conserving marine flora, fauna, habitats and features of geological or geomorphological interest.

In Scotland, the selection of MPAs is being undertaken at a national level, primarily based on science-based selection guidelines (Brooks et al., 2011). Engagement with stakeholders will be undertaken throughout the process, but socio-economic data may only be used to select between sites of equal scientific merit during boundary setting, or to address the feasibility of management measures. This process contrasts to some extent with that which has taken place in England and Wales, and it will be interesting to monitor and assess the outputs of the two processes.

## 3. Coastal access – background

Legislative powers pertaining to coastal access in England, Wales and Scotland differ (Table 2), although the intentions are largely similar, and most of the issues surrounding access are common to all three countries. In England, Natural England's Approved Scheme addresses many of these issues.

Natural England's Approved Scheme outlined the stages in establishing the coastal route and set out how the range of coastal environments will be sensitively accommodated. In terms of geodiversity the most critical issue is ensuring the coastal route does not disrupt natural processes: the coast should continue to erode and accrete and, therefore, maintain its geological and geomorphological integrity. The 2009 Coastal Access Audit (Natural England, 2009) identified 13% of the existing public rights of way around the English coast as being subject to loss through erosion over the next 20 years. This has established a critical principle within the Approved Scheme that the new coastal route will be able to 'roll back' automatically in such situations, preventing future loss of continuity and acknowledging the dynamic nature of the coastline.

Increased coastal visits may also lead to heightened footfall erosion as well as pressure from activities such as fossil collecting. These risks are highlighted as part of the Approved Scheme which ensures that route alignment avoids potentially sensitive areas and where collecting may be an issue, local guidelines (e.g. West Dorset Fossil Collecting Code) and any established legislative control should be followed.

### 3.1. Coastal access and geodiversity

Increased coastal access presents significant opportunities for the understanding, knowledge and enjoyment of geodiversity. The establishment of a Wales Coast Path, the long-term goal of securing

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