



Stakeholder perceptions of recreational and management impacts on protected coastal dune systems: A comparison of three European countries

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ABSTRACT

Coastal dune systems are particularly susceptible to destabilisation through recreational pressure and because of this, conflicts frequently arise between those who want to use the dunes for recreational purposes and those who wish to see these fragile ecosystems protected. In addition, a range of approaches to resolving this conflict are being used in different countries with differing levels of success. To study this conflict, an approach based on the Q-method was applied to three European Union Member States, i.e. Ireland, Scotland and Germany to determine the degree to which there are differences in opinion regarding recreational management in coastal conservation areas and to assess whether there are examples of perceived best management practice that could be applied to some or all of these countries. The Q-method involved using semi-structured interviews of stakeholders (conservationists and non-conservationists, i.e. landowners, locals and landusers) to yield a set of statements relating to recreational and management impacts on protected coastal dune systems in each of the selected countries. Selected statements were then submitted to former interviewees for rating on a seven point scale from complete agreement to complete disagreement. Principle components analysis (PCA) of these ratings (Q-sorts) indicated that while there is much agreement overall (particularly relating to the protection of dune systems while still supporting recreation), stakeholder opinion can be separated according to country of origin. In general, this separation is reflected in the intensive recreational management regime (strict zonation and access restrictions) at the German sites compared to the Scottish (less recreational management) and Irish (absence of recreational management) sites. Significant differences in opinion are most apparent in the sections concerned with restricting access for recreation and the provision of facilities (less acceptable in Scotland and Ireland). We suggest that given Irish stakeholder opinions regarding the potential loss of naturalness through strict recreational management, the Scottish rather than the German model would be more suitable in the Irish context.

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Introduction

Coastal areas, the interfaces between land and sea, constitute a region of great diversity, both physically and biologically (Westhoff, 1985). There are many different habitats found in coastal zones, but a particularly large diversity of habitat types is found in coastal dune systems, including embryonic dunes, shifting or mobile dunes, many different types of fixed dunes, dune scrub and woodland, dune slacks and machair (Fossitt, 2000; Nairn, 2005; Ranwell, 1959, 1960; Rodwell et al., 2000). Dunes by their nature are dynamic systems and some disturbance is essential for habitats in coastal dune systems (Klijn, 1990). However, coastal sand dune systems are

also fragile and prone to erosion by wind and water, which can be worsened by human impacts.

Coastal dune systems and their conservation under European legislation

Coastal areas are, and have been for a long time, a focus for human settlement, placing demands on these areas particularly as a result of housing and infrastructure as well as more traditional landuses such as agriculture (Verhagen, 1990; Westhoff, 1985). In the last 60 years coastal areas have also been targets for the tourism and recreation industries (Cabot, 1977; Catto, 2002; Gormsen, 1997; Helsenfeld et al., 2008; Lemauiel et al., 2003). As a result, coastal areas have become increasingly exposed to new developments such as hotels, campsites and golf courses. In many cases sand dune systems have become transformed to such an extent that they can no longer be considered natural systems (Lemauiel et al., 2003).

However, even in the absence of intense tourism and recreational facilities, dunes are particularly susceptible to

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destabilisation through recreational pressure involving humans, animals and vehicles (Andersen, 1995; Burden and Randerson, 1972; Curr et al., 2000; Hylgaard and Liddle, 1981; Kerbiriou et al., 2008; Kindermann and Gormally, 2010; Liddle and Greig-Smith, 1975a,b; Luckenbach and Bury, 1983; Quigley, 1991; Sun and Liddle, 1993). Because of this, conflicts frequently arise between those who want to use the dunes for recreational purposes and those who wish to see these fragile ecosystems protected. The European Habitats Directive (92/43/EEC) protects habitats across Europe, including many habitats in coastal dune systems. Habitats of European importance are listed in Annex I of the Habitats Directive and some, such as fixed coastal dunes with herbaceous vegetation ('Grey Dunes') and Irish machairs, have been awarded priority conservation status under the directive. The majority of habitats listed in the directive which require special measures to be taken for their protection are designated as Special Areas of Conservation (SACs) in each Member State (MS). There is a requirement for site management so that habitats and species therein are "maintained at, or restored to, a favourable conservation status, while still allowing for human activity to take place" (Bundesministerium für Umwelt, 2008). However, the establishment and management of SACs in the different MS has encountered a number of problems, especially at local level (Krott, 2000; Visser et al., 2007). Problems include a general delay in implementation of the Habitats Directive, resulting in fines from the European Court (Krott, 2000), as well as controversies relating to the designation of SACs without prior consultation with landowners and landusers (Krott, 2000; Visser et al., 2007; Weber and Christophersen, 2002). In many MS, the implementations of SAC designations have met with opposition, which caused delays notably in the establishment of SACs, but also in the implementation of appropriate management strategies.

Conservation and recreation management in coastal dune systems

The use of coastal conservation areas for recreational purposes is considered to be legitimate, and the challenge for conservation managers is to balance conservation goals with impacts from human use (Kerbiriou et al., 2008). Although MS (under EU regulation) are obliged to conserve habitats in SACs while allowing for human activity to take place, these two uses can be in conflict with each other (Young et al., 2005).

Orams (1995) lists four possible visitor strategies for the management of wildlife tourism which may be applied to the management of recreational activities in natural areas in general (I-Ling, 2002): (a) physical management; (b) regulatory management, which refers to the introduction of rules and regulations; (c) economic management, where charges are introduced for the use of an area; and (d) educational management, also referred to as soft management. Physical management is a regularly utilised form of management when it comes to areas which are prone to physical stresses such as erosion damage through trampling (Orams, 1995). In relation to educational management, Hughes and Morrison-Saunders (2005) stress the importance of employing the correct level of intensity when it comes to on-site interpretation in particular. An excessively high level of interpretation may have negative effects on site visitors in that it may ruin the experience for visitors by overwhelming them. On the other hand, too little information may leave visitors dissatisfied in that they feel the full meaning or importance of site features cannot be accessed. A similar problem governs the use of regulatory management strategies. Over-regulation may give the visitor the impression that they are prevented from fully experiencing all a site has to offer, while too little regulation may not serve conservation aims (Holden, 2000).

Public participation in conservation management is considered to be a key feature when it comes to successful management, for both recreation and conservation. This approach is increasingly

being taken into account in relation to coastal conservation (Cassar, 2003; Johnson and Dagg, 2003; Milligan et al., 2009; O'Mahony et al., 2009; Power et al., 2000), with the need for public participation reiterated in the Aarhus Convention (1998) and by the European Council Directive on public participation (2003/35/EC). Integrated Coastal Zone Management (ICZM), which aims to deliver sustainable development of coastal zones through an integrated planning and management approach for the entire coastal zone, further advocates public participation (European Commission, 2007). While not all European countries have a national strategy, ICZM projects are advocated in all counties and call for an integrated process that provides the opportunity for stakeholders at all levels to participate in the management process (European Commission, 2007; O'Hagan and Ballinger, 2010; McKenna et al., 2008; Rupprecht Consult, 2006). By involving the public in the management process, rules and regulations are not imposed top-down and people are more willing to adhere to them (Johnson and Dagg, 2003). Broadhurst (2001) points out that areas managed with the involvement of the public have a higher success rate than those which exclude the public.

When it comes to management of coastal conservation areas that are being used for recreational activities, all of the above management strategies need to be considered to ensure that the optimal approach is found. While it is important to employ the correct level of management to ensure successful conservation of sites (I-Ling, 2002), this can be difficult to implement and over- or under-management can result in conservation management that is ineffective or perceived to be so (Holden, 2000).

Following a detailed study of the impacts of recreational activities on a coastal dune system in Ireland (Kindermann and Gormally, 2010; Kindermann, 2011), the need for careful management of recreation in such areas was recognised, especially where dune systems in SACs are concerned. In order to establish the best possible strategy for management, the conflict between management of conservation and recreation in Ireland and in two other MS (Scotland and Germany) was assessed. Scotland was chosen because it has similar coastal habitats (particularly machair) to Ireland and similar recreational pressures. Germany was chosen because recreational pressure exceeds that in Ireland as a result of which management intervention is more extensive. Stakeholders' opinions in the three EU countries were explored on the topic of SAC designation and management, with a focus on the application of conservation legislation at ground level. Further investigation followed regarding the impacts of recreation on coastal dune systems in SACs and the effectiveness of management in dealing with these impacts. This included investigating the opinions of stakeholders on the conflict between habitat protection and recreational activities in coastal conservation areas in those three countries.

The aims of this study are to: (1) investigate the degree to which there are differences in opinion between stakeholders (A: between countries overall, B: between conservationists in all three countries, C: between non-conservationists in all three countries, D: between conservationists and non-conservationists overall and in each country) and (2) determine whether there are examples of perceived best management practice in resolving conflict that could be applied to some or all of these countries.

Materials and methods

Site description

Coastal sites in three European countries, i.e. Ireland, Scotland and Germany were included in this study (Fig. 1). Three coastal dune systems on the Slyne Head Peninsula, Co. Galway, Ireland, were selected, in addition to two dune systems in the Outer Hebrides off the Scottish west coast and two dune systems in the

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