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The use of marine wildlife-watching codes and their role in managing activities within marine protected areas in Scotland

Anna Inman [a], Esther Brooker [b], Sarah Dolman [c, b], Rona McCann [d], A. Meriwether W. Wilson [a, *]

[a] University of Edinburgh, School of GeoSciences, Grant Institute, James Hutton Road, Edinburgh, EH9 3FE, UK
[b] Scottish Environment LINK (Marine Group), 2 Grosvenor House, Shore Road, Perth, PH2 8BD, UK
[c] Whale and Dolphin Conservation, Brookfield House, 38 St Paul Street, Chippenham, Wiltshire, SN15 1LJ, UK
[d] University of Glasgow, School of Life Sciences, Graham Kerr Building, Glasgow, G12 8QQ, UK

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ABSTRACT

Marine wildlife-watching is a developing industry in Scotland contributing to overall growth and aspirations of the marine tourism sector. Despite European-level legal protection of cetaceans, and Scottish legislation for the protection of seals at designated haul-out sites, there are currently no formal or mandatory regulations to specifically manage tourism activities in relation to marine wildlife. However, most Scottish wildlife-watching operators adopt one, or more, of the five key voluntary codes of conduct which have been developed in the UK since 2003. In this paper, we review the consistency of policy messages and recommendations across voluntary codes of conduct for the UK and Scotland, taking into consideration global use and effectiveness in the use of similar codes. In this context, we specifically examine the potential impacts of wildlife watching and management of future activities, both within and outwith marine protected areas (MPAs) in Scotland. For this, the research also incorporates data from field surveys, *in-situ* observations and operator questionnaires conducted in Scotland relating to the implementation of the codes in practice. Key findings highlighting inconsistences in some of the key recommendations across the five UK codes in particular, the distance and speed when approaching an animal. However, all of the codes also have some similarities, including advising against deliberate human interaction, e.g. swimming with marine megafauna, including a separate code on basking sharks, published by the Shark Trust in the UK. In light of the growing network of wildlife-focused MPAs in Scotland (in particular the Sea of Hebrides proposed MPA for mobile species), and national aspirations for the growth of the marine tourism sector, we consider the potential implications of unregulated wildlife watching and the conservation objectives of protected areas for marine mammals and basking sharks. We also provide recommendations on how more formal wildlife-watching regulations could enhance MPA effectiveness and contribute to the emerging processes for Regional Marine Plans across Scotland and provide some insights for global marine wildlife tourism.

1. Introduction

Wildlife-watching is a relatively recent development within the global tourism industry, which involves the organised or incidental viewing of animals in their natural environment. It is broadly considered to be an 'environmentally-friendly' form of tourism and is increasingly contributing to tourism portfolios and economies for many countries (Duffus and Dearden, 1990; Tapper, 2006). Wildlife-watching and ecotourism can have multiple benefits, such as supporting conservation efforts through data collection, employing and uniting local communities, and increasing public awareness about environmental issues (Stem et al., 2003; Stronza and Gordillo, 2008). Marine wildlife-watching tours can be used as platforms for scientific research and used to educate the public on conservation issues relating to cetaceans (whales, dolphins and porpoises – IWC, 2013). This can sensitise people to the conservation threats of these species, and as a result, raise environmental awareness (Garrod and Fennel, 2004). However, emerging evidence

* Corresponding author.
E-mail address: Meriwether.Wilson@ed.ac.uk (A.M.W. Wilson).

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indicates that there can be potential negative impacts of human interactions with wildlife, primarily on the species of interest to marine wildlife-watching, which can have immediate and cumulative effects on the animals behaviour (Green and Giese, 2004).

Unlike other boat traffic, marine wildlife-watching boats repeatedly target and remain with an animal rather than passing by (Wursig and Evans, 2001; Erbe, 2002; Lusseau and Bejder, 2007). Boat presence can interfere with the ability of marine wildlife to communicate due to boat noise, and disrupt behaviour such as feeding, during which an animal may avoid interacting with a boat (Erbe, 2002; Lusseau, 2004; Williams et al., 2006; Parsons, 2012). These changes in energy expenditure can have short- and long-term negative impacts on individuals and populations, potentially reducing fitness, the reproductive capability of individuals and the overall health of a population, and pose a threat to small populations (Erbe, 2002; Lusseau and Bejder, 2007).

1.1. International regulation of marine wildlife-watching in MPAs

A 'protected area' is defined by the IUCN as '*a clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values*'. There are a number of ways that marine tourism is managed around the world through marine protected areas (MPAs) and other marine designations (such as marine reserves) (Hoyt, 2012). Zoning, permits, codes of conducts, and enforced minimum approach distances are all strategies used to manage marine wildlife-watching activities within protected areas for cetaceans (Reeves, 2000; Notarbartolo-di-Sciara et al., 2008; NOAA, 2014). There are a number of examples globally where there has been poor compliance to statutory and voluntary regulations, such as in South Australia where authorities have had to limit the number of marine wildlife-watching operators in the area (Allen et al., 2007). In 2004, approximately one-third of global cetacean-watching codes were regulatory, with two-thirds adopted on a voluntary basis (Garrod and Fennel, 2004; Parsons, 2012).

Species-specific codes of conduct provide more targeted management enabling the establishment of stricter regulations to limit disturbance to species within particular locations (Giles, 2014). For example, in the Hawaiian Islands Humpback Whale Marine Sanctuary, there is a legally enforced minimum approach distance of 100 yards for approaching humpback whales in the sanctuary, which is applicable for both recreational and commercial boat users (NOAA, 2014). These more specific codes of conduct can be designed to allow for seasonal species distributions and tourism cycles, making the management more targeted to the preferences of the animals.

The allocation of an MPA can act as a marketing tool that raises awareness for marine wildlife-watching activities as protected areas are often synonymous with tourists as high-quality examples of a particular habitat, encouraging growth of the industry (Warburton et al., 2001; Reinius and Fredman, 2007). In the process, however, the profile of an MPA can increase pressure and the degradation of the environment (Buckley, 2012). For example, MPA designation in the Medes Islands, Spain, in the 1980's resulted in large increases in unregulated diving activity that damaged benthic communities (Badalementi et al., 2000; Milazzo et al., 2002).

The ideal situation is for a particular marine environmental setting and species to be managed in such a way that the species can actually benefit from tourism and MPA designation. Potts et al. (2014) suggest that '*protection will maintain an ecosystem in good ecological condition, which will have a positive effect on the delivery of ecosystem services*,' which in this case is the marine wildlife-watching industry. Therefore, there is the potential that optimal protection of the environment will benefit both the environment and the industry if appropriate regulations are in place and adhered to.

1.2. Marine protected areas in Scotland

In Scotland, there is a growing network of MPAs, some of which are designated or proposed for the conservation of cetaceans, pinnipeds (seals) and chondricthyans (sharks, rays and skates); these sites are summarised in Table 1. Given the dynamic nature of marine wildlife in time and space across different life-history stages, the management connection with typically static zoning and spatially oriented activity management is a growing area of interest to researchers and practitioners alike (Cañadas et al., 2005; Hooker et al., 2011). MPAs are increasingly considered to be an important tool for biodiversity protection under a number of international frameworks and are beginning to demonstrate some effectiveness where monitoring has been carried out (Gormley et al., 2012; O'Brien and Whitehead, 2013). A number of studies have demonstrated that spatial protection and management within MPAs can lead to an increase in higher predator populations (such as sharks), and furthermore can be highly attractive for marine tourism with economic opportunities through local management (Brunnschweiler, 2010; Jaiteh et al., 2016).

All European cetacean species, pinnipeds and basking sharks are currently protected from deliberate or accidental harassment, injury or death through national transposition of the EU Habitats Directive (1992) and the Nature Conservation (Scotland) Act 2004. Some are listed as qualifying species for spatial protection within Special Areas of Conservation (SACs), including bottlenose dolphin and harbour porpoise. Furthermore, in Scotland, since the introduction of the Marine (Scotland) Act 2010, nature conservation marine protected areas (ncMPAs) have been identified for selected mobile species based on evidence of significant areas where species aggregate for key functions or life stages (e.g. feeding or spawning). Nature conservation MPAs mandate considerations for licensable activities, through the environmental impact assessment stage, and a separate process is currently underway in Scotland to determine ncMPA and SAC management measures for non-licensable activities, including commercial fisheries. At present, based on the current implementation of MPA management options in Scotland, it appears no additional statutory management considerations will be given to recreational use and wildlife-watching within MPAs under the Act, and there is little evidence available that these activities have a site-level impact on protected species within many of these sites (although these are not formally monitored). However, voluntary measures within the Moray Firth bottlenose dolphin SAC, where impacts have been demonstrated (Hastie et al., 2003; Cheney et al., 2012) and the industry is considered to be at capacity (Lusseau, 2013), are currently being tested (personal observation, S. Dolman).

Marine tourism is considered as part of Scotland's National Marine Plan, which was adopted in March 2015 and includes marine planning policies to comply with codes of conduct for marine wildlife-watching. Scotland's National Marine Plan also contains reference points for the development of Regional Marine Plans. These will be important mechanisms for considering the management of wildlife-watching within specific MPAs and local sea areas for specific species. Furthermore, Scotland, a country with a strong commitment and reputation for nature-based tourism, plans to increase its marine tourism industry, including wildlife-watching, as evidenced through an action plan[1], launched in November

[1] Awakening the Giant, a Strategic Framework for Scotland's Marine Tourism Sector: http://scottishtourismalliance.co.uk/wp-content/uploads/2014/02/Awakening-the-Giant-final.pdf.