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SEA CHANGE

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Common Dolphins. Nicola Hodgins/WDC

Ten years after protected marine areas for cetaceans were first designated, what have we learnt, and what should we put into practice for the future?

Legislation and resulting protection of the marine environment have advanced exponentially in the last five years. It has often been said that these remain decades behind terrestrial measures, but, with marine planning and protected areas now mandated, we may finally be catching up with management of *terra firma*.

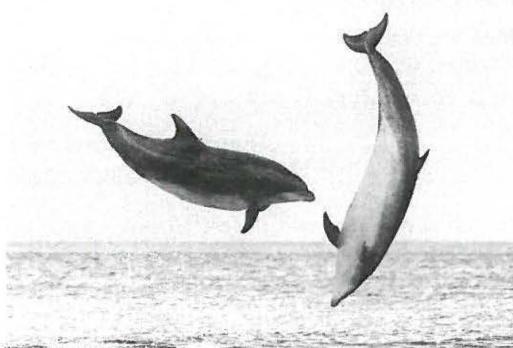
A case in point is the mechanism of Marine Protected Areas (MPAs) for conservation of biodiversity. Protected areas on land and in the sea take many forms and sizes and encompass a variety of features (species and habitats). They also offer varying levels of management of human activities, from none (paper parks) to strict protection. Yet the sea is a three-dimensional, largely unseen and little-understood component of our planet. It differs greatly from the land, and requires new ways of thinking and new approaches for effective management of human activities.

The seas around the UK host an incredible diversity of whale, dolphin and porpoise species

– some of the richest in Europe. There are more than 20 different cetacean species found in our waters, from the relatively small Harbour Porpoise *Phocoena phocoena* to large species such as the Sperm *Physeter macrocephalus*, Humpback *Megaptera novaeangliae* and endangered Blue Whales *Balaenoptera musculus*.

Cetaceans are wide-ranging and, like other marine mobile species, they reside in or return to known habitats or oceanic features to socialise, to find a mate or to locate a reliable food source, throughout their lives. Such areas are known as cetacean-critical habitat and this refers to those parts of a cetacean species' range that are essential for day-to-day well-being and survival, as well as for maintaining a healthy population. Areas that are regularly used for feeding, breeding, raising calves and socialising, as well as, sometimes, migrating, are all essential critical habitat and these areas are suitable for designation as MPAs.

Some scientists and decision-makers, however, remain sceptical about the utility of spatial measures of protection for species which are highly mobile and which are, after all, already afforded 'strict protection' throughout UK (and European) waters wherever they are found.



Two Bottlenose Dolphins breaching in the Moray Firth. Terry Whittaker/FLPA

The inception of UK cetacean MPAs began for Bottlenose Dolphins *Tursiops truncatus* in the Moray Firth, Scotland, and in Cardigan Bay, Wales, with the designation of EU Special Areas of Conservation (SACs) in 2004. So, what have we learnt in ten years since designation of Bottlenose Dolphin SACs, and are these populations benefiting?

European protection for Bottlenose Dolphins: ten years on

At the time of designation, the Bottlenose Dolphin population in the Moray Firth was largely contained within the SAC boundary (Wilson *et al.* 1997) and was reported to be unfavourable (recovering) (Thompson *et al.* 2006). In the more recent review in 2012, the proportion of the population that used the SAC between 1990 and 2010 had declined, this most probably due to an overall increase in population size rather than dolphins leaving the SAC (Cheney *et al.* 2012). The population was reported as being stable or increasing, containing about 198 dolphins (Cheney *et al.* 2012). It is difficult to tell whether this increase is directly related to the designation and subsequent management measures, but certainly population monitoring that has been undertaken to measure the dolphin's status has been facilitated, at least in part, by funding because of the SAC.

Under pressure

Since the site's designation, the Bottlenose Dolphins in the Moray Firth have faced changing pressures

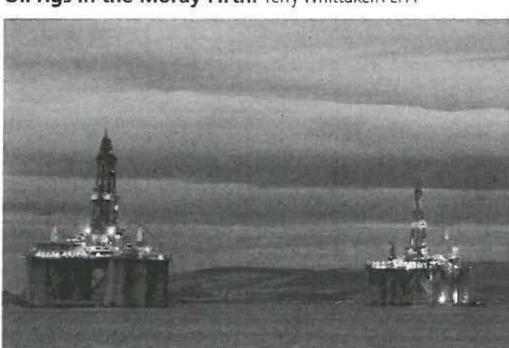
in their habitat. In recent decades, oil and gas exploration has introduced seismic surveys in the northern North Sea, including within the Firth, which has resulted in impacts (Pirotta *et al.* 2014). The Ministry of Defence (MoD) conducts military exercises in the region, including live firing and active sonar use. Shipping is increasing, and this, alongside dredging activities, has been shown to have an impact on the dolphins (Merchant *et al.* 2014; Pirotta *et al.* 2013). The management of fisheries within SACs is currently under consideration in Scottish Government, although this has not focused on marine mammals to date.

The designation brings with it an additional level of environmental assessment that has been effective at assessing potential impacts, and in some cases requiring additional mitigation and/or monitoring (including for military exercises, and oil and gas exploration). This is perhaps the most significant positive result of the designation.

While any impacts associated with these sectors is incidental, there is also an expanding commercial marine wildlife-watching industry in the Moray Firth that spends the summer season seeking out and interacting with the dolphins. This sector is thought to be at capacity within the SAC (Lusseau 2013). Hastie *et al.* (2003) suggested that short-term changes in the breathing behaviour of the resident dolphins, as a result of boat-based dolphin-watching, may have longer-term consequences for individual dolphins and the whole population.

On a more positive note, visitors who come to see the dolphin population contribute more than £4 million to the economy (Davies *et al.* 2010) and have resulted in this active seasonal commercial boat-based industry, as well as availing themselves of a great opportunity for land-based watching and

Oil rigs in the Moray Firth.





Dolphin-watching in the Moray Firth has significantly boosted the local economy. WDC/Charlie Phillips

monitoring (Thompson *et al.* 2004). Undoubtedly, designation as an SAC has led to opportunities for increasing the profile of the site and the enjoyment of countless tourists.

In future years, the dolphins will be subjected to increasing ship traffic and construction noise associated with pile-driving and expanding ports to accommodate a developing offshore-wind industry. In the last year alone, consent has been given for no fewer than seven offshore windfarms within the range of the dolphins. Pile-driving, in particular, will continue for many years in the offshore waters, largely outside the dolphins' core habitat, but within their range of hearing, with unknown consequences.

Although we are still some way from understanding the cumulative impacts of all these pressures faced by this dolphin population in its day-to-day life, this SAC designation has enabled a focused approach in the management of some activities that may cause pressures that result in significant effects and subsequent population impacts. To this end, the designation has also enabled the development of tools to allow better assessment of pressures. One such tool is that of gauging interim population consequences of disturbance (PCOD). A practical example of its application can be found in the assessment of potential impacts on the dolphin population of the expansion of a number of ports and harbours associated with the development of the wind-farms, alongside the existing commercial dolphin-watching industry (Lusseau 2013).

It is only more than a decade of baseline monitoring, which is a requirement of SAC designation, that has enabled such a quantitative assessment of impacts. Such analysis and assessment are unlikely to be possible for less well-studied species.

Crossing boundaries

In the last decade or two, the dolphins have extended their range, so that some of the population continues to be found within and now ranges outside the SAC along the coastal waters of Aberdeenshire (Weir *et al.* 2008) and across into the waters of north-eastern England. The reasons for this range expansion remain unknown. The protective requirements of the Habitats Directive, however, mean that SAC protection follows the individual dolphins outside the SAC boundary, resulting in a higher level of environmental assessment throughout their range. This would appear to be a holistic and forward-looking approach, as well as being novel, enabling assessment of multiple pressures by relevant authorities wherever the dolphins occur.

Facing infraction

Bottlenose Dolphins and Harbour Porpoises are the two cetacean species listed on Annex II of the EU Habitats Directive, requiring designation of SACs for their protection throughout European waters. The UK has regionally important populations of both species. In addition to the two SACs where Bottlenose Dolphins have been identified as a primary reason for designation, Northern Ireland has designated the Skerries and Causeway SAC, where Harbour Porpoise is a qualifying feature. As a result, this is the only site in UK waters where management measures for the conservation of porpoises are currently required.

The European Commission determined Harbour Porpoise representation in the SAC network to be 'Insufficient/moderate' overall in 2009, and has been in dialogue with the UK government on the issue since. This culminated in publication of a Reasoned Opinion in October as the Commission remains concerned about the failure of the UK authorities to identify sufficient sites for the protection of Harbour Porpoise. The UK was given two months in which to comply with the Directive or provide its response. Sites have been identified



Like the Bottlenose Dolphin, the Harbour Porpoise requires designation of SACs for its protection.

Andrew Cleave/NPL

by various conservation organisations (Dolman *et al.* 2013; Evans & Prior 2012; Clark *et al.* 2010), as well as directly for JNCC, the UK statutory nature-conservation advisors.

A REFIT

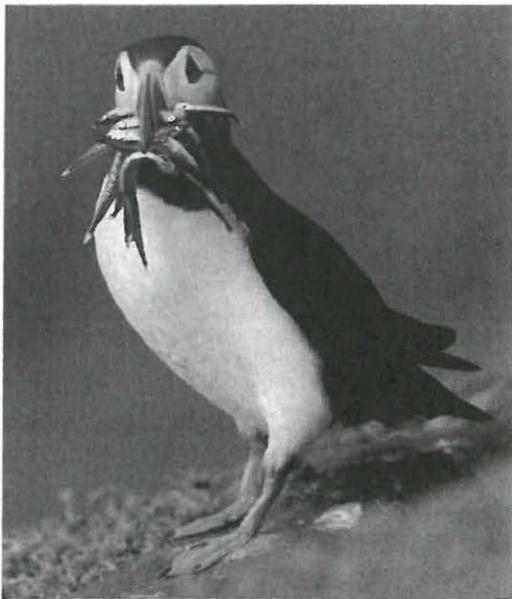
Despite some problems with implementation, such as the reluctance of the UK government to designate sites for porpoises, generally the Habitats Directive has done great things to improve the conservation of many species and habitats, including and beyond the designation of SACs. The EU is currently undertaking a Regulatory Fitness and Performance Programme (REFIT) of the Habitats and Birds Directives, and the outcomes of this will clearly influence the application of European environmental policy in the future. A public consultation is expected in 2015.

Designating nationally important sites

Regardless of these potential challenges at a European level, Annex II listed species which do not meet the European threshold for designation as SACs, but are important populations on a national basis, are currently automatically excluded from

the national MPA/MCZ designation processes. If, following objective scientific analysis, it is considered that Natura sites provide adequate coverage for nationally important populations in a given MPA region (which they currently do not), there would be no need to designate further sites. Without recognition of Bottlenose Dolphins and Harbour Porpoises as nationally important populations, these species would receive at best only consequential protection, and, in the absence of being located alongside other priority marine features, may receive no protection. Species already afforded some level of protection under the EC Habitats Directive should not be precluded from inclusion in MPAs for nationally important populations of marine species, especially where existing sites/protective measures are deemed not to provide adequate protection for nationally important populations (Dolman *et al.* 2013; ClientEarth 2013).

An important duty of the UK Marine and Coastal Access Act 2009 and the Marine (Scotland) Act 2010 is to create an ecologically coherent network of well-managed Marine Protected Areas (MPAs) to satisfy nature-conservation priorities. The UK Act makes provisions for designating Marine Conservation Zones (MCZs) in English and Welsh territorial waters (0–12 nautical miles out), as well as in UK



Sandeels, such as these clutched by an Atlantic Puffin, are among the wildlife for which MPA site proposals are being made. Andrew Mason/FLPA

offshore waters (12–200nm). The UK Act created new powers for Scottish Ministers to designate MPAs in offshore waters adjacent to Scotland. The Scottish Act makes provision for MPAs in Scottish territorial waters. New legislation is expected in Northern Ireland to introduce equivalent provisions in its territorial waters. The achievement of the internationally required target of a ‘coherent network of MPAs’ is therefore something of a challenge, with various types of MPA (European, national and local), different political processes and attitudes, and the usual data deficiencies (compounded by the high costs and other challenges of monitoring at sea).

There would seem to be three key points that determine whether MPAs will be considered and implemented as a conservation tool for cetaceans in the UK. These are, for both processes in Scotland and England/Wales, whether definable areas used for important life processes can be identified (the ‘appropriateness’ test) (Natural England & JNCC 2010); and for Scotland, whether species are determined to be ‘key features’ and/or under threat or declining (Marine Scotland 2011).

Conservation groups such as WDC (Whale and Dolphin Conservation) have been working within the evidence-based framework, using existing

effort-based data from various sources, to make site proposals for a variety of species, including Harbour Porpoises, Bottlenose Dolphins, White-beaked Dolphins *Lagenorhynchus albirostris*, Risso’s Dolphins *Grampus griseus*, Common Minke Whales *Balaenoptera acutorostrata* and Short-beaked Common Dolphins *Delphinus delphis* (Clark *et al.* 2010; Dolman *et al.* 2013).

We have made some progress towards national MPAs in Scotland. Proposed MPAs resulting from third-party proposals for Risso’s Dolphins (and sandeels) in north-east Lewis (Western Isles), and Minke Whales in the Southern Trench (Moray Firth) and Sea of Hebrides (west Scotland) seem likely to go to public consultation and will, it is hoped, become MPAs in 2015.

Understanding and managing pressures

JNCC has argued that spatial management is not appropriate for Harbour Porpoises and that a sector-based approach using mitigation is the most appropriate. Yet management remains piecemeal, often ineffective, and with resulting impacts largely unknown. Strandings data tell a sorry tale of anthropogenic impacts from multiple sources (e.g. Deaville & Jepson 2011). Bycatch, for example, has been for decades a major conservation and welfare concern, and for Harbour Porpoises it is likely that current levels are higher than populations can sustain (ICES WGBYC 2014). Yet impacts of bycatch are not taken into account when considering other existing activities at sea or new developments.

Recent evidence points to there being a number of sub-populations of porpoises around the UK, including within the North Sea. One must add to this an inadequate understanding of the true levels of injury and disturbance at sea resulting from human activities. Such data gaps combined with piecemeal management do not provide reassurance. The more we learn, the more apparent it becomes that porpoises cannot be managed as a large UK-wide population, and cannot be managed on a sector-by-sector basis, with questionable mitigation measures.

MPAs, however, cannot deal with all pressures. That is why a spatial site-based approach is required alongside a wider management, to ensure ‘strict protection’ for all cetaceans within UK (and European) waters.



Pod of Risso's Dolphins. Hiroya Minakuchi/Minden Pictures/FLPA

Completing the jigsaw puzzle

So, with current UK and devolved governments' efforts, shall we end up with an ecologically coherent and well-managed network of MPAs to protect our whales, dolphins and porpoises alongside other key UK habitats and species? This is, after all, the international commitment that the UK government has signed up to.

This is not a static process, and decisions taken now will be reviewed on a six-yearly basis. We must learn as we go, identify data gaps and fill them, so there is the opportunity to add to and develop sites in the network. It is not entirely clear what 'ecologically coherent' means, either for cetaceans or for the network as a whole, and there is a lot of work going on within JNCC and other agencies to determine this.

We all have a role to play in delivering an ecologically coherent network of MPAs. The government has the responsibility to deliver international commitment; developers and other marine-users should demonstrate environmental responsibility; and scientists and conservation groups are often those who collect data and train and empower citizen scientists. WDC was responsible for collecting a significant amount of field data towards the 'North-east Lewis Risso's Dolphin proposed MPA' and submitted the third-party proposal, with NGO

colleagues, for all three cetacean sites. WDC also runs a citizen-science project called Shorewatch, with sites in each of the proposed MPAs.

Are the tides turning for MPAs?

Field surveillance effort will be required, at a level that allows monitoring to ensure adequate management, compliance and the identification of further sites where baseline data are currently lacking. For example, White-beaked Dolphin distribution is shifting farther north and this species' range is contracting with our changing climate (MacLeod *et al.* 2008). Prioritisation will no doubt be required for such key species, where sites can be identified in order to alleviate other immediate pressures.

Being highly mobile marine species, cetaceans present definite challenges when it comes to our attempts to develop conservation measures, particularly as there are still many gaps in our knowledge. With this in mind, it will be important to develop MPAs in a precautionary manner. This means ensuring that they are sufficiently large (at least in the early stages), flexible, and adaptive to new information in order to provide us with buffers against uncertainty and to ensure that critical habitats have been protected.

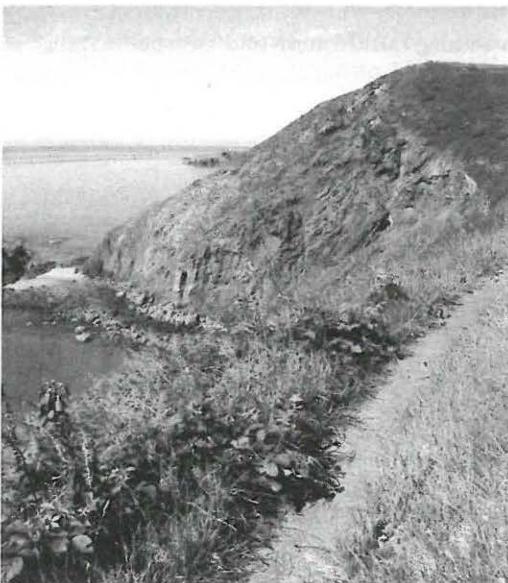
The assessment of a coherent network of whale and dolphin MPAs requires an EU-wide view, both

Common Seals at the Moray Firth. Nicola Hodgins/WDC



for biological reasons, where mobile species cross national boundaries, and for political reasons, including meeting international and regional requirements such as the EU Habitats Directive and the Marine Strategy Framework Directive. The transition from the current largely *ad hoc* site-by-site selection to a more systematic and network-level approach will require clear guidance (Olsen *et al.* 2013).

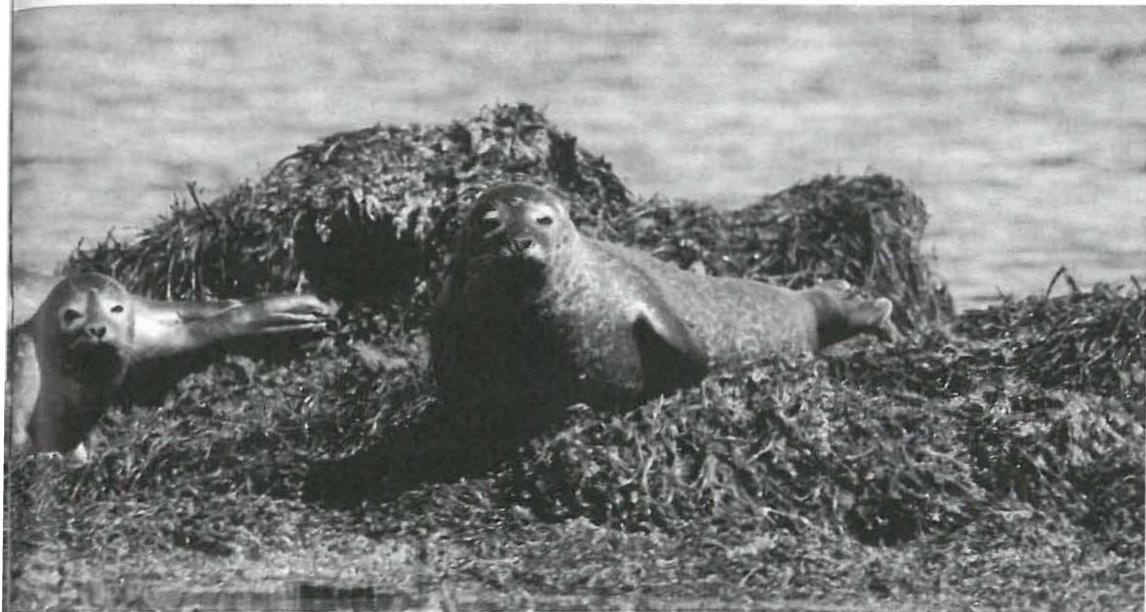
Coastal path alongside Cardigan Bay. REX/Photofusion



Opportunities for engagement will continue with English MCZ tranche 2 consultation in early 2015, and then a tranche 3 which will, we hope, include a greater focus on mobile species. We remain hopeful that a Scottish MPA consultation on existing proposed MPAs for Risso's Dolphins and Minke Whales will also take place in the first half of 2015. Consultations on Harbour Porpoise SACs in UK waters and Welsh MCZs should follow shortly thereafter.

An audit should be undertaken at a UK level, once the MPAs are designated, to ensure that the sites are in the right places and that they will provide adequate coverage and will have effective management. A joined-up, coherent and comprehensive approach is necessary for the UK to achieve an ecologically coherent network of MPAs that include cetacean habitat, as well as habitat for other mobile marine species. This may be done by working within the devolved context to find ways to implement joint management approaches, where this is required.

Despite the challenges identified, we remain hopeful that the considerable efforts made by the UK and devolved governments, Statutory Nature Conservation Bodies (SNCBs), scientists, conservation groups, industries and communities will be worthwhile and will contribute to the conservation and, it is hoped, the recovery of some of the UK's most important and best-loved marine species and habitats.



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