

Benefits and Pitfalls of MPAs as a Conservation Tool for Cetaceans

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Introduction

Protected areas as a tool for conservation have a long history as seen in national parks, reserves, sanctuaries and many other named areas with various levels of protection, public access, and commercial use. Marine protected areas (MPAs), especially those that would protect whales, dolphins and porpoises (cetaceans), however, are only a few decades old (Hoyt, 2011). In many ways, MPAs are a work in progress with various conservation bodies and agreements, e.g., International Union for Conservation of Nature (IUCN) Marine Mammal Protected Areas Task Force, Convention on the Conservation of Migratory Species of Wild Animals (CMS) regional agreements, Convention on Biological Diversity (CBD), as well as certain national governments, trying to ensure habitat protection for cetaceans. However, the route to effective protection takes funding as well as time – on the order of 5-10+ years – from the identification of suitable habitat, to the government and public stakeholder process necessary for approval of an area to be set aside, followed by the management plan and management body, and building the kind of on-the-ground support needed to create an effective MPA.

The definition of a protected area (PA), according to the IUCN, is “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” (Dudley, 2008). A marine protected area is a PA in the marine realm which extends from the intertidal zone to the deep ocean. As with PAs, MPAs are a common generic term for hundreds of variously named areas in countries around the world. Just as with PAs, not all MPAs are created equal—in fact far from it. The IUCN divides protected areas into categories representing a continuum from stricter protection to regimes designed for sustainable resource use as shown in Table 1 (Dudley, 2008; Day *et al.*, 2012).

Category	Definition	Main management goal
Ia	Strict nature reserve	for science
Ib	Wilderness area	to preserve wilderness or natural condition
II	National park	ecosystem protection and recreation
III	Natural monument or feature	conservation of specific natural or cultural features and recreation
IV	Habitat/species management area	conservation of particular species or habitats, often through management intervention
V	Protected landscape/seascape	to protect and sustain landscapes/seascapes and associated nature conservation and other values created by interactions with humans through traditional management practices
VI	Protected area with sustainable use of natural resources	sustainable use of ecosystems

Table 1. Definition of the various IUCN MPA/PA categories
Source: adapted from Dudley (2008).

Many MPAs have only one category but, increasingly, multiple categories are employed within a single MPA in order to achieve various management objectives through zoning, often using the biosphere reserve model (Agardy, 2010; Hoyt, 2011). Table 2 outlines the diversity of management objectives which can be achieved by each category.

In general, MPAs are set up to protect vulnerable species and ecosystems, to conserve biodiversity and minimize extinction risk, to re-establish ecosystem integrity, to segregate uses to avoid user conflicts, and to enhance the productivity of fish and marine invertebrate populations (Pauly *et al.*, 2002; Hooker and Gerber, 2004). MPAs may be created to take into consideration threats to species and habitats (Halpern *et al.*, 2008; Agardy *et al.*, 2007). MPAs are

also useful in terms of providing a public focus for marine conservation (Agardy, 1997). A given MPA may have any one or several of the above goals. A highly protected MPA, or marine reserve, set aside as a no-take, or so-called IUCN Category I, area could be useful for marine mammal conservation by helping predators and prey to recover (Bearzi *et al.*, 2006). Of course, setting up an MPA around cetaceans which function as umbrella species can often result in positive effects for many other species (Simberloff, 1998; Hoyt, 2011).

MPAs for cetaceans require targeted management measures to address species and ecosystem threats either as part of the MPA itself or through laws and regulations in each country. Currently, in terms of conservation of most cetacean populations, most MPAs are too small, too few in number, and weak in their protection and enforcement measures; many are “paper reserves”—MPAs in name only (Hoyt, 2011). The best MPAs, however, hold promise for marine species and ecosystems with their focus on substantial highly protected zones, their use of ecosystem-based management (EBM) principles, and their inclusion as part of larger MPA networks. A few MPAs are already showing conservation results for cetacean populations such as gray whales (*Eschrichtius robustus*) (Hoyt, 2011, 2015) and New Zealand Hector’s dolphins (*Cephalorhynchus hectori*) (Gormley *et al.*, 2012). Good overall indicators of MPA effectiveness are given by Edgar *et al.* (2014) who identified five characteristics of a successful MPA based on statistically significant outcomes on fish population metrics, including: “no-take, well enforced, old (>10 years), large (>100km²) and isolated by deep water or sand”. A sixth essential characteristic, though harder to measure, is having supportive stakeholders.

Management objective	IUCN MPA/PA category						
	Ia	Ib	II	III	IV	V	VI
Wilderness protection	A	A	B	C	C	na	B
Scientific research	A	C	B	B	na	B	C
Species or genetic diversity	A	B	A	A	A	B	A
Environmental services	B	A	A	na	A	B	A
Natural or cultural features	na	na	B	A	C	A	C
Tourism, recreation, including commercial whale watching	na	B	A	A	C	A	C
Education	na	na	B	B	B	B	C
Sustainable use	na	C	C	na	B	B	A
Cultural attributes	na	na	na	na	na	A	B

Notes: A = primary objective; B = secondary objective; C = may be applicable; na = not applicable. Note that the IUCN category can represent an entire MPA or one zone in an MPA. Thus many MPAs contain multiple zones each with its own category.

Table 2. The management objectives of the various IUCN MPA/PA categories
Source: adapted from Green and Paine (1997) and Hoyt (2011).

Global targets for MPAs

In 2010, the CBD countries of the world met in Nagoya, Japan, and agreed 20 Aichi biodiversity targets. Among them, directed partly at cetacean conservation, was a strategic goal to improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity. Aichi Target 11 declared that by 2020, at least 17% of terrestrial and inland waters, and 10% of coastal and marine areas, especially areas of importance for biodiversity and ecosystem services, must be conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures. As of October 2020, terrestrial

areas had 15% coverage, but only 5% of them are effectively managed, short of the target. Marine areas were further behind, with 7.6% coverage and as little as 1% effectively managed¹.

In 2014, the sixth IUCN World Congress on Protected Areas or World Parks Congress (WPC), in Sydney, recommended that the target should be 30% of coastal and marine areas conserved and effectively managed by 2030. Since then, many NGOs and scientists, as well as the United Kingdom (UK) and other governments, have joined the “30 by 30” call, providing a strong benchmark to guide implementation efforts².

Some countries have met or exceeded their 10% commitment but many have not even come close. Obviously, 10%, or even 30%, is just a target and what matters is careful selection of the areas needing protection and effective, enduring protection of those habitats. Of note is that the targets to date have only been achieved with the designation of very large areas, especially in the Pacific, mainly through efforts stimulated by the Pew Global Ocean Legacy Program. To some extent the targets fulfilled by European countries have also fallen into this category.

Marine Protected Areas and other spatial protection measures in Europe

Most coastal or island European countries have made some progress toward marine habitat protection in their waters, including protection for cetaceans (Hoyt, 2005, 2011). In terms of fulfilling Aichi Target 11, however, the targets have mainly been filled in territorial waters far from continental Europe. Thus, the UK government designated the 638,000 sq km Chagos Islands MPA in the Indian Ocean, as well as Pitcairn, South Georgia, Tristan da Cunha, and South Sandwich Islands, yet equivalent conservation actions in waters around the UK itself have languished for years. Similarly, France has made declarations in its extensive overseas estate, including the Agoa Sanctuary (Guadeloupe and Martinique waters) in the Caribbean and New Caledonia in the western Pacific. Although not on the same scale, Spain and Portugal have more readily made MPAs in their offshore areas or territories, the Canary Islands (Spain) and the Azores and Madeira (Portugal), with modest-sized MPAs along their mainland coasts. An exception is the 87,500 sq km Pelagos Sanctuary for Mediterranean Marine Mammals, which was designated in 1999 as a transborder MPA in the national waters of France, Italy, and Monaco and partly on the high seas. In 2001, it was declared a Specially Protected Area of Mediterranean Importance (SPAMI) under the Barcelona Convention (Notarbartolo di Sciara *et al.*, 2008). More recently, however, this “MPA” has been criticized for failing to offer real protection (Notarbartolo di Sciara, 2011; Notarbartolo di Sciara and Agardy, 2016). Ship strike and noise remain as primary threats to fin (*Balaenoptera physalus*) and sperm (*Physeter macrocephalus*) whales in the Pelagos Sanctuary, as well as in the outside area west of the sanctuary, and executing a comprehensive, effective management plan remains a challenge.

Throughout most of Europe, the most prominent use of the MPA tool for conservation of cetaceans has been the European Union (EU) Habitats Directive with its network of special areas of conservation (SACs). Put in place in 1992, the Habitats Directive applies to all EU states, including the Azores, Madeira and the Canary Islands. Parts relevant to cetaceans include: Annex II (Animal and plant species of community interest whose conservation requires the designation of SACs), which, for cetaceans, includes only bottlenose dolphins (*Tursiops truncatus*) and harbour porpoises (*Phocoena phocoena*); and Annex IV (Animal and plant species of community interest in need of strict protection) which covers all the cetacean species in the marine areas of the EU, but has not been used to create habitat protection for the cetacean species requiring it.

Soon after the EU Habitats Directive was approved, a number of countries (notably Spain, Ireland, the UK, at least for bottlenose dolphins) embraced the measure, declaring various candidate areas, many of which were later approved. Portugal, Italy, Croatia and others were in the second tranche of countries whose efforts were a decade or more later, while other countries such as Greece are only recently coming up to speed, at least in terms of identifying cetacean areas. The UK was slow to approve harbour porpoise sites; just before the UK voted to leave the EU, WWF took action at the EU level against the UK and sites were then announced. With coronavirus and the economic downturn of 2020, it remains to be seen how and when these newer sites will be created.

¹ <https://www.protectedplanet.net/target-11-dashboard> ; fully/ highly protected is 2.6% according to <https://mpatlas.org> (accessed 3.11.2020)

² <https://www.gov.uk/government/news/uk-creates-global-alliance-to-help-protect-the-worlds-ocean>

SACs for coastal bottlenose dolphins form an extensive network with varying protection measures implemented by each country. The problem with most SACs is that the protection awarded to the offshore, pelagic and deep sea marine environment is extremely limited (Hoyt, 2011). In addition, when the Habitats Directive was put in place in 1992, little was known about many cetacean species so, except for bottlenose dolphins and harbour porpoises, they were not included on Annex II. The Habitats Directive and Annex II need to be updated with current knowledge about known habitats for Risso's dolphins (*Grampus griseus*), Atlantic white-sided (*Lagenorhynchus acutus*) and white-beaked dolphins (*Lagenorhynchus albirostris*), minke whales (*Balaenoptera acutorostrata*), fin whales, sperm whales and Cuvier's beaked whales (*Ziphius cavirostris*), among others, some of which carry a threatened status.

Germany, by comparison to the UK, France, Spain and Portugal, has only a small marine estate. In the Baltic, Germany has taken an active role in identifying and declaring SACs for harbour porpoise, the only cetacean species regularly present. In addition, Germany has made a substantial contribution to work toward high seas protection, including work leading to the current effort to forge a high seas agreement. The Global Ocean Biodiversity Initiative – International Climate Initiative (GOBI-ICI) programme, a suite of international spatial projects funded by the German climate initiative, is providing substantial support (2016-2021) aimed at understanding and promoting marine conservation of marine mammals and birds in national waters and on the high seas (Johnson *et al.*, 2019).

In Scotland, the MPA process has proposed 30 new Scottish MPA sites but only a few involving cetaceans (Risso's dolphin and minke whale habitats). Hopkins *et al.* (2016) highlight several issues if the Scottish MPA network is to move beyond an administrative exercise toward a meaningful contribution to marine biodiversity protection for Europe: i) fully adopt best practice ecological principles, ii) ensure effective protection, and iii) explicitly consider climate change in the management, monitoring and future iterations of the network.

In France, Spain and Portugal, an online questionnaire was administered to MPA managers, focused on multiple processes inherent to each MPA, namely on the characteristics and suitability of planning, management, monitoring, governance and enforcement (Batista and Cabral, 2016). Responses were used to calculate the overall level of MPA management effectiveness. Only 9% of analysed MPAs are larger than 1000 km² and they are unequally distributed in the study area. Overall, 46% of MPAs and 59% of the total area covered was established during the last five years, while only 3 of the 35 no-take areas (22% in area) were implemented during this period. MPA effectiveness (i.e., the extent to which an MPA is protecting values and achieving its goals and objectives) was related to high levels of stakeholder support, with suitable goals, management and enforcement. Results highlighted the need to improve MPA coverage taking into account other existing MPAs to increase coherence and representativeness of networks, that new no-take areas should be implemented in key conservation sites and that management strategies (e.g. enforcement and monitoring) should be strengthened (Batista and Cabral, 2016). Also in EU waters, Dureuil *et al.* (2018) found widespread industrial exploitation of MPAs; of 727 MPAs designated, 59% of them were commercially trawled with the trawling intensity being 1.4 times higher within the MPAs compared to outside areas.

Non-EU countries have been slower to implement conservation measures. Iceland has the most diverse and accessible cetacean fauna in Europe including endangered big baleen whales and diverse toothed whales and dolphins. Researchers and groups have identified prime whale habitats for possible future protection including Faxaflói (also used by whalers for hunting minke whales) and Skjálfandi Bay, but the idea of cetacean MPAs has yet to gain government support (Hoyt, 2011). In Norway, including Svalbard, some areas have been protected that include cetacean habitats but Norway's whaling policy has not encouraged the idea of protecting cetacean habitat.

MPAs covering both national and high seas European waters

The North East Atlantic is unique in the world in terms of a group of nations working together to identify and implement MPAs on the high seas. The work is carried out through the Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention). For each of the OSPAR High Seas MPAs created, a background document has been produced that covers the scientific rationale including the presence of marine mammals (OSPAR list species). The OSPAR MPAs are slowly gathering acceptance and the usefulness of the model has been oft mentioned in discussions of marine biodiversity in areas beyond national jurisdiction (BBNJ) at the United

Nations (UN) that hopefully will lead to a global legally binding agreement for protecting biodiversity on the high seas (D. Johnson, pers. comm. 2020).

Besides OSPAR, European waters are covered by two CMS regional conventions; the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS) and the Agreement on the Conservation of Small Cetaceans of the Baltic, North East Atlantic, Irish and North Seas (ASCOBANS). Both treaties overlap OSPAR to a small extent, and ACCOBAMS in the Mediterranean includes high seas, although that will disappear as national claims extend further when Mediterranean Exclusive Economic Zone (EEZ) boundaries are agreed. Unlike OSPAR, ASCOBANS and ACCOBAMS are specifically focussed on cetaceans, although ASCOBANS only on small cetaceans.

In addition to the above, a key agreement for global marine conservation, including the high seas, was created within the CBD with its ecologically or biologically significant areas (EBSAs) which aim to identify “high seas critical habitats”. These include habitat uniqueness or rarity, species or habitat fragility or vulnerability, importance for threatened or declining species or habitats, high biological productivity, high biological diversity, importance for life history stages, and naturalness. EBSA workshops have covered the Mediterranean basin, the Baltic Sea, the Black Sea and the North East Atlantic Ocean. EBSAs are not MPAs, but it would be valuable to look at the areas identified with cetaceans as candidates for MPAs and other spatial protection measures.

Similarly, the important marine mammal area (IMMA) tool—closely aligned to the EBSA and the BirdLife important bird and biodiversity area (IBA) tools—is specifically designed for the identification of marine mammal habitat from nearshore waters to the high seas (Notarbartolo di Sciara and Hoyt, 2020). IMMAs, which are not MPAs, can also provide leads for needed spatial protection measures including MPAs³. To date, the IMMAs have covered the Mediterranean and a small portion of the North Atlantic off Africa, but will expand further into the North Atlantic and Baltic Sea in the future.

Europe is already well disposed to work on the high seas, even without a UN BBNJ agreement. Therefore, much more progress could be made even before the agreement has been put in place. The obstacles to progress in the region appear to have more to do with gaining agreements between countries and regulating industry, and then acting upon the recommendations of scientific and country member bodies to implement MPAs with management plans, management bodies and substantial funding to make MPAs effective. It is time for governments to step up and pay attention to sustaining marine biodiversity and that means focussed efforts with appropriate budgets.

Conclusion: What is needed for MPA and spatial protection

MPAs and other spatial tools are valuable for conservation. Still, they were never going to address all the problems, threats and challenges of ensuring that highly mobile cetacean populations can recover and flourish (Hoyt, 2011). Spatial approaches need to be employed, along with threat reduction. As the CBD has pointed out, it’s not just a matter of creating MPAs but ensuring that the goal is conferring sustainability upon the whole ocean. That is a tall order. MPAs have a long way to go to become the kind of tool for cetacean and marine habitat conservation, such that the whales, dolphins and porpoises themselves notice the difference.

Recommended actions

Policy

- Countries should be encouraged to go for, not just 10%, but at least 30% protection of their national waters, and similar levels for international waters once BBNJ legislation comes in.
- Governments should extend the OSPAR approach to creating high seas MPAs to more actively consider cetaceans, in anticipation of the BBNJ legislation.

³ marinemammalhabitat.org

- Regarding Brexit, the UK must keep its SACs and high levels of protection and implement and extend proposed MPAs for Risso's dolphins and other cetaceans in UK waters.
- The EU cannot be allowed to lose the focus on habitat conservation and needs to enhance and extend the Habitats Directive, or other legislation, to other cetacean species besides harbour porpoises and bottlenose dolphins.
- Although MPAs are the most popular and well-known spatial protection tool, the emphasis should be on creating MPAs, or modifying existing MPAs, to make highly protected IUCN Category I reserves. Other spatial tools which may be useful for cetacean protection should not be forgotten including International Maritime Organization (IMO) Particularly Sensitive Sea Areas (PSSAs) and other directives which could help to reduce noise or the risk of ship strike.
- Marine spatial planning exercises need to take into account various uses and give space to cetaceans through IMMAs, to seabirds through marine-IBAs, as well as actively promoting protection of biodiversity.

Management measures

- Managers should monitor and improve effectiveness of MPAs against their stated goals. Every MPA requires a management regime with both a management body and a plan that includes provisions for enforcement, public education, monitoring, research and periodic review and adaptive management.
- As a large, highly visible MPA for the region, the Pelagos Sanctuary requires an effective management body, implemented plan and budget, and the political will to achieve the goals of conserving cetaceans.
- Interim management measures could also be extended to IMMAs: consider adjusting or extending MPA boundaries or implementing other spatial habitat measures (IMO directives, etc.) to IMMAs newly created in the Mediterranean.
- Regarding CMS and its impact in Europe (as well as setting an example for the rest of the world), it would be valuable to put more teeth into the directives for protection adopted by ACCOBAMS and ASCOBANS parties by empowering a special citizen/stakeholder/civil society group to put in place the recommendations and adopted resolutions.

Private sector

- Authorities should regulate industrial activities in cetacean areas.
- All stakeholders should be encouraged to support MPAs by becoming part of community groups.
- Stakeholders should encourage private sector business to help with funding MPAs.

Science

- Authorities and managers should support established and novel approaches to identifying and quantifying cetacean biodiversity in national waters and on the high seas, including aerial surveys (within EEZs), shipboard transect surveys, and the latest satellite identification techniques.

Public

- Authorities and managers should establish education programmes to improve knowledge and caring about whales and the sea.
- The public should be encouraged to participate in MPA stakeholder groups.

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