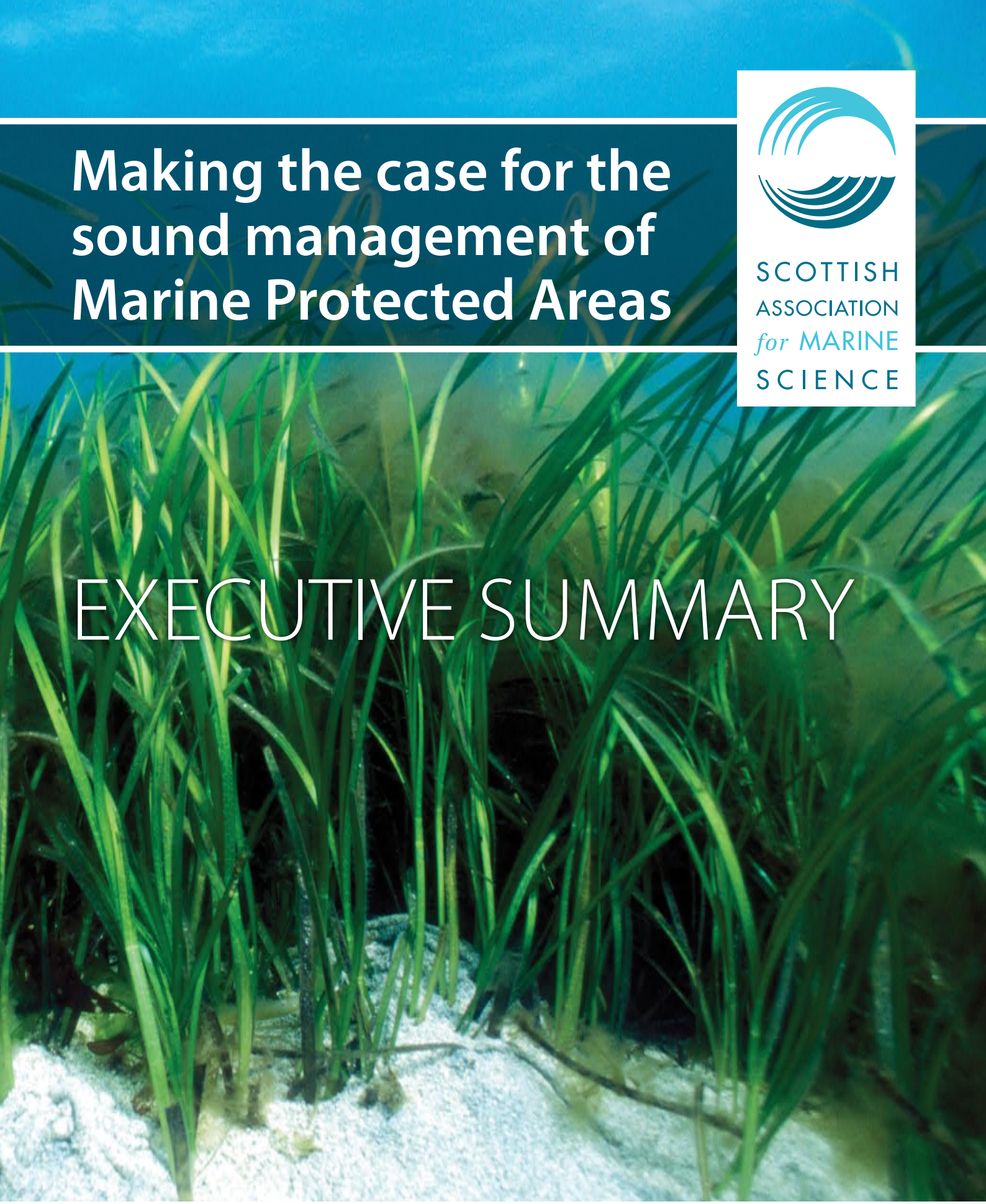
Making the case for the sound management of Marine Protected Areas

SCOTTISH ASSOCIATION *for* MARINE SCIENCE



EXECUTIVE SUMMARY

A Report to Scottish Environment LINK




CREDITS

Report to LINK: ***Making the case for the sound management of Marine Protected Areas*** by Scottish Association for Marine Science

(See http://www.scotlink.org)

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Marine Conservation Society
National Trust for Scotland
RSPB Scotland
Scottish Wildlife Trust
WWF Scotland
Whale and Dolphin Conservation Society

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FOREWORD

With the passage of the Marine (Scotland) Act 2010, Scotland has shown its desire to protect and enhance one of the most diverse ecosystems on the planet – our marine environment. Now we must seize the opportunity provided by this new legislation and achieve our shared vision for a clean, healthy, safe, productive and biologically diverse marine and coastal environment. With cross-sector support, this vision can become a reality, but only if we use the full range of measures now available to us. Of vital importance is the designation of a well-managed, ecologically coherent network of Marine Protected Areas (MPAs).

Scottish Environment LINK commissioned this scientific report to inform and shape our position on the management of nature conservation MPAs. 'Making the case for sound management of Marine Protected Areas' has been independently produced by the Scottish Association of Marine Science.

The report highlights that MPAs are not only important to protect our marine wildlife, but also vital for our economy and the fight against climate change. Crucially, it recognises that management decisions are just as important as the designation of sites in the creation of an ecologically coherent network that will help us achieve our shared vision for Scotland's marine environment. Development of conservation objectives and management plans will be vital steps in this process and provide an opportunity to radically change the face of marine nature conservation.

The report endorses some long-standing views, held by LINK and many others, on how MPA management practices can be carried out in Scotland to support a biologically diverse and productive marine environment. For example, whilst damaging activities must be managed, harmonious activities should be encouraged. If damaging activity continues to occur within a protected site, regulatory measures such as Marine Conservation Orders, will be required. Guidelines and codes of conduct for recreational and tourism activities should be promoted, while fisheries legislation and fisheries management plans such as those prepared by Inshore Fisheries Groups, must ensure conservation objectives for MPAs are met.

Other measures recommended in the report include Environmental Impact Assessments for commercial fisheries; buffer zones around fish farms; and the use of no-take zones. Crucially, as with the designation of sites, all management decisions must be based on the best available scientific knowledge.

Getting the right sites designated is central to the success of Scotland's new approach to marine conservation. However, for a real success story, we are dependent on how economic and social activities are managed in and around these areas in order to achieve conservation objectives. If we succeed at this, we will have made a huge step towards safeguarding marine biodiversity and recovering the health of our seas.

We hope the recommendations made in this report will provide a useful tool for decision makers and delivery bodies. We wish to encourage transparency and inclusivity in the development of MPAs with clear objectives and the use of an adaptive co-management approach. Ultimately, the success of an MPA is wholly reliant on political will to develop management plans, implement the necessary regulatory measures and invest in long-term monitoring and research programmes. The integration of competing industries will be challenging, but it must not be forgotten that healthy marine ecosystems underpin all goods and services provided by the sea. Making the correct management decisions now is vital to meet the long-term needs of people and nature.

Scottish Environment LINK's Marine Task Force

EXECUTIVE SUMMARY

The purpose of this scientific report is to inform the LINK position on the sound management of Nature Conservation Marine Protected Areas (NC-MPAs) following their designation under the Marine (Scotland) Act 2010. If well planned, appropriately resourced and properly managed, MPAs can play an important role in both nature conservation and the wider economy, benefiting marine industries as well as helping to mitigate the effects of climate change on marine ecosystems. The new Scottish legislation is based on the three pillar approach to marine conservation in Scotland, as elaborated in the draft Strategy for Marine Conservation in Scotland (Marine Scotland 2010). The three pillars are wider seas policies and measures, species conservation and site protection.

This report places an emphasis on site-based management measures and is limited to Nature Conservation MPAs for the protection of biodiversity and geodiversity. The Marine (Scotland) Act 2010 also includes provisions to designate Demonstration and Research MPAs and Historic MPAs. We support the concept of these MPAs, but detail on the management of such sites is beyond the scope and purpose of this work. For the purpose of this report, the term 'MPA' will be used to refer to Nature Conservation MPAs (NC-MPAs) unless otherwise stated.

… it is critical that the management of MPAs protects identified features according to their ecological requirements and viability.

It is essential that areas or species already designated some level of protection under other legislations, eg, the EC Habitats/Birds Directive, SPA, SACs, SSSIs, are not and should not be precluded from inclusion in wider MPAs, eg, seawards extensions to encompass critical habitats, for nationally important populations of marine species or habitats. This is especially important where existing sites/protective measures are not deemed to provide adequate protection for nationally important populations or habitats in a given region, eg, where populations of species do not meet European thresholds.

The report recognises that it is critical that the management of MPAs protects identified features according to their ecological requirements and viability. Determining the 'ecological need' of habitats and species is scientifically complex and we strongly

support the articulation of this in the evolving definition of 'ecological coherence', based on the 2007 OSPAR[1] definition which states that:

"An ecologically coherent network of MPAs:

i. interacts and supports the wider environment;

ii. maintains the processes, functions, and structures of the intended protected features across their natural range;

iii. functions synergistically as a whole, such that the individual protected sites benefit from each other to achieve the two objectives above; and

iv. (additionally) may be designed to be resilient to changing conditions."

This is discussed further in Section 3 in relation to priority marine features.

This report's focus on management does not mean that we consider that social and economic considerations are only relevant during the management of MPAs and not before. While a discussion of the identification and designation of MPAs is beyond the scope of this paper, we underscore the importance of considering ecological, social and economic factors at all stages of the MPA process. It is essential to 'take the community with us' to maximise the benefits of MPAs for ecosystems and society.

It is essential to 'take the community with us' to maximise the benefits of MPAs for ecosystems and society.

The report then considers seven examples of either ecologically meaningful habitats that protect one or more of the species listed in Annex 3 of the draft MPA guidelines, Marine Protected Areas in the Seas around Scotland (Marine Scotland 2010), or individual species. This approach takes into account ecological coherence, viability and function, rather than selecting features on an individual basis. The features are: tidally swept communities, biogenic reefs, seagrass beds, native oyster beds, burrowed deep muddy habitats, seamounts and mobile species. Mobile species are included as an example, because it is recognised that a coherent MPA network must include sites and critical habitats that are fundamental to the survival of species such as seabirds,

1. http://www.ospar.org/documents/DBASE/Publications/p00319_OSPAR_MPA_status_report%202006.pdf

cetaceans, pinnipeds, fish and invertebrates. The results are summarised in Table 1 and further information is contained in Appendix 2.

The final section of the report makes recommendations for the management of MPAs in Scotland.

Table 2 identifies management options for MPAs, showing the impacts of different sectors and how they can be managed by a mix of MPA 'site' instruments and 'wider measures' external to MPAs. This section highlights the benefits of joined-up thinking and the important role of Marine Spatial Planning in managing MPAs. It also makes general recommendations for MPA management (and implicitly design) and includes a section on adaptive management in the context of climate change.

An adaptive (co-) management approach is essential, especially in the context of climate change…

Key recommendations include that MPA site selection, decision-making and management should be based on the best currently available scientific knowledge and investment must be made into integrated MPA research, including ecological, social and economic considerations. An adaptive (co-)management approach is essential, especially in the context of climate change as is the use of a range of policy instruments and regulatory levers. Where our understanding of habitat functional roles is rudimentary or there is a lack of data, precautionary management strategies are required. Furthermore, protected areas are only effective if they are monitored, and this allows for adaptive management of MPAs. Monitoring is challenging in regions far from shore, for example, deep-water and offshore seamounts.

It is recommended that opportunities for appropriate access to and/or compatible use of marine resources consistent with MPA management plans, conservation objectives and ecological coherence should be encouraged, using zoning and spatial planning measures.

MPA objectives must be clearly defined in a transparent and inclusive manner and it is essential to commit to a common understanding and interpretation of the significance of MPAs among stakeholders. Increasing public awareness about ecosystem functioning and the role of MPAs is also important, especially in the context of evolving environmental challenges such as climate change and associated ocean acidification.

TABLE 1. SUMMARY TABLE FOR PRESSURES ON PRIORITY MARINE FEATURES & MPA MANAGEMENT PRIORITIES.

Feature	Biotope / species	Conservation status	Pressures	Recovery potential	MPA management priorities
Tidally swept communities	Flame shell *Limaria hians*	UKBAP, SBL	Mobile fishing gear Coastal infrastructure Localised anchorages & moorings	No data	Spatial management of mobile gear, eg, scallop dredging and trawling in MPAs, including closed areas. Mapping of *L. hians* beds. Reduce impacts of transboundary damaging activities outside MPAs. Improve monitoring and conservation biology including recovery studies.
	Horse mussel beds *Modiolus modiolus*	UKBAP, SBL, OSPAR, EU	Localised fishing Mobile fishing gear: dredging Coastal infrastructure Spoil and waste dumping Aquaculture	Sporadic and poor annual recruitment Long recovery time Long lived species	Restriction and management of activities not compatible to *Modiolus* conservation in MPAs. This may include closed areas. Buffer zones for infrastructure development to reduce sedimentation. Spatial planning of marine cage aquaculture to minimise impacts. Reduce impacts of transboundary damaging activities outside MPAs. Long term research into recovery & monitoring. Linked MPA sites for improved recruitment.
	Maerl beds	UKBAP, SBL, OSPAR, EU	Scallop dredging Commercial extraction Aquaculture nutrient pollution and smothering Coastal infrastructure Localised anchorages & moorings	Long lived species (some maerl beds 8000 years old) Low regenerative capacity – slow growth (1mm/year) High sensitivity to physical factors, eg, smothering	Activities not compatible to maerl conservation excluded from MPAs. This may include closed areas. Long term MPA planning and monitoring. Reduce impacts of transboundary damaging activities outside MPAs. Representative MPAs of biotope across the UK and NE Atlantic. Increase monitoring and disturbance / recovery studies of maerl biotope.
Biogenic reefs	*Lophelia pertusa*	UKBAP, OSPAR, EU	Localised fishing Mobile gear: trawling Oil and gas extraction Deep-sea mining Pipeline and cable laying Climate change Ocean acidification	Extremely long recovery time Long lived species (100s years) Slow growing Low recruitment	Restriction and management of activities incompatible with *Lophelia* conservation in MPAs. This may include closed areas. Buffer zones for infrastructure development to reduce sedimentation and physical disturbance. Networked MPA sites for improved recruitment. Long term research into ecology, recovery & monitoring. Adaptive management approach to climate change and ocean acidification. Reduce impacts of transboundary damaging activities outside MPAs.

Feature	Biotope / species	Conservation status	Pressures	Recovery potential	MPA management priorities
Biogenic reefs (cont.)	Serpulid reefs *Serpula vermicularis*	UKBAP, EU	Localised fishing Mobile gear: trawling and dredging Coastal infrastructure Aquaculture Chain and anchor damage from moorings Hand collection	High potential for recovery Episodic annual reproduction Life span 2-5 years	Restriction and management of activities incompatible with *Serpula* conservation in MPAs in particular fishing, anchorages and moorings. This may include closed areas. Buffer zones for infrastructure development to reduce sedimentation and physical disturbance. Networked MPA sites for improved recruitment. Long term research into recovery & monitoring. Reduce impacts of transboundary damaging activities outside MPAs.
	Horse mussel reefs *Modiolus modiolus*	UKBAP, SBL, OSPAR, EU	Localised fishing Mobile gear: dredging Predation Coastal infrastructure Spoil and waste dumping Aquaculture Chain and anchor damage from moorings Target fishery	Long recovery time Sporadic and poor annual recruitment Long lived spp.	Restriction and management of activities incompatible with *Modiolus* conservation in MPAs. This may include closed areas. Buffer zones for infrastructure development to reduce sedimentation. Spatial planning of marine cage aquaculture to minimise impacts. Long term research into recovery & monitoring. Networked MPA sites for improved recruitment. Reduce impacts of transboundary damaging activities outside MPAs.
	Common/ Blue Mussel reefs *Mytilus edulis*	UKBAP, OSPAR	Localised fishing Mobile fishing gear: dredging Sedimentation and subsequent parasitic infection Aquaculture Pollution: hydrocarbons and TBT Storms Predation	High to intermediate recovery potential Poor annual recruitment Short lived	Restriction and management of activities incompatible with *Zostera* spp. conservation in MPAs. This may include closed areas. Buffer zones for infrastructure development to reduce sedimentation. Spatial planning of marine cage aquaculture to minimise impacts. Long term research into recovery & monitoring. Networked MPA sites for improved recruitment. Reduce impacts of transboundary damaging activities outside MPAs.

Feature	Biotope / species	Conservation status	Pressures	Recovery potential	MPA management priorities
Seagrass beds	*Zostera* spp.	UKBAP, SBL, OSPAR, EU	Disease, grazing and storms Water pollution: nutrients, heavy metals from aquaculture and terrestrial runoff Physical disturbance: coastal infrastructure, mobile fishing gear anchorages.	Long recovery time (5-10 years). Sensitive to physical disturbance and smothering. High seed mortality	Restriction and management of activities incompatible with *Zostera* spp. conservation in MPAs. This may include closed areas. Ensure ecological requirements for *Zostera* spp. are met through MPA design. Industrial activities within MPAs not detrimental to recovery. Minimising physical disturbance and sedimentation within and external to MPAs. Long term recovery of *Zostera* must link to long term MPA planning. Increase active restoration, eg, transplantation. Reduce impacts of transboundary damaging activities outside MPAs.
Native oyster beds	*Ostrea edulis*	UKBAP, SBL, OSPAR	Harvesting Water pollution Smothering from coastal infrastructure construction or towed gear Disease and parasites	Recovery likely to be slow due to variable recruitment and pressures from competitors, pests and disease. Requires hard substrate. Recovery of 10-25 years.	Spatial management of *O. edulis*. This may include closed areas. MPAs must contribute to restoration of *O.edulis* (OSPAR Criteria ii) over long time scales. Creation of appropriate habitat features (eg, hard substrate 'cultch') and linkage between sites 'corridors' for larval dispersal. Direct prevention of overharvesting/ illegal gathering. Minimisation of physical disturbance and smothering in proximity to MPA. Active monitoring of sites and removal of pests / invasive sp. MPA should drive public education about restoration. Reduce impacts of transboundary damaging activities outside MPAs.
Burrowed deep muddy habitats	Seapens, burrowing megafauna	UKBAP, OSPAR	Mobile gear: dredging and trawling Anchoring and mooring Smothering Organic enrichment	No data	Restriction and management of activities incompatible with seapen and burrowing megafaunal conservation in MPAs. This may include closed areas. Buffer zones for infrastructure development to reduce sedimentation. Spatial planning of marine cage aquaculture to minimise impacts. Long term research into recovery & monitoring. Reduce impacts of transboundary damaging activities outside MPAs.

Feature	Biotope / species	Conservation status	Pressures	Recovery potential	MPA management priorities
Seamounts		UKBAP (*Lophelia* on seamounts), OSPAR, UNICPOLOS	Mobile gear: trawling Cable and pipeline laying Vessel anchoring Waste disposal CO_2 sequestration Climate change Ocean acidification Sampling activities	No data available but likely to be very slow recovery due to long-lived spp. present in communities and poor recruitment between widely dispersed seamount communities	Adoption of a precautionary management approach due to lack of data and adaptive approach to climate change and ocean acidification. Restriction of activities incompatible with seamount conservation. This may include closed areas. Buffer zones for infrastructure development to reduce physical damage, disruption of water movement, sedimentation. Long term research into recovery & monitoring. Networked MPA sites for improved recruitment. Take into account role as critical habitat for many species, including mobile species, when determining conservation strategies. Reduce impacts of transboundary damaging activities outside MPAs.
Mobile species	Seabirds, eg, Black guillemot: *Cepphus grylle*	UKBAP, EU	Fishing By-catch Offshore renewable energy devices Pollution and contaminants CO_2 sequestration Climate change and ocean acidification impacts on prey distribution Marine (eco)tourism	Slow recovery *k*-selected spp. Long-lived Slow growing Low annual recruitment	Restriction of activities incompatible with seabird conservation. This may include closed areas. Protection of critical habitats and movement corridors. Seaward extension of existing land-based site protection. Adaptive management approach to climate change and ocean acidification. Scientific research and monitoring. Promotion and/or production of existing codes of conduct. Reduce impacts of transboundary damaging activities outside MPAs.
	Cetaceans Various	UKBAP, EU, IUCN, CITES	Fishing By-catch Aquaculture Boat and propeller collision Offshore renewable energy devices Military activities Oil and gas exploitation Pollution and contaminants CO_2 sequestration Climate change and ocean acidification impacts on prey distribution Marine (eco)tourism	Slow recovery *k*-selected spp. Long-lived Slow growing Low recruitment Energy-expensive young	Restriction of activities incompatible with cetacean conservation. This may include closed areas. Protection of critical habitats and movement corridors. Adaptive management approach to climate change and ocean acidification. Scientific research and monitoring including public sighting initiatives Promotion and/or production of existing codes of conduct. Reduce impacts of transboundary damaging activities outside MPA.

Feature	Biotope / species	Conservation status	Pressures	Recovery potential	MPA management priorities
Mobile species (cont.)	Pinnipeds, eg, grey seal: *Halichoerus grypus* & common seal: *Phoca vitulina*	EU	Fishing By-catch Aquaculture Offshore renewable energy devices Military activities Oil and gas exploitation Pollution and contaminants Marine (eco)tourism	Slow recovery *k*-selected spp. Long-lived Slow growing Low recruitment Energy-expensive young	Restriction of activities incompatible with pinniped conservation. This may include closed areas. Protection of critical habitats and movement corridors. Seaward extension of existing land-based site protection. Scientific research and monitoring. Promotion and/or production of existing codes of conduct. Reduce impacts of transboundary damaging activities outside MPAs.
	Fish, eg, Common skate: *Raja batis* Basking shark: *Cetorhinus maximus*	UKBAP, WCA, CRoW, EU, IUCN, CITES, OSPAR	Fishing By-catch Boat and propeller collision Offshore renewable energy devices Pollution and contaminants CO_2 sequestration Climate change and ocean acidification impacts on prey distribution Marine (eco)tourism	Recovery dependent on spp. *k*-selected spp., eg, Basking shark, recovery slow: Long-lived Slow growing Very low, sporadic recruitment Energy-expensive young	Restriction of activities incompatible with fish conservation. This may include closed areas. Vessel and speed restrictions. Protection of critical habitats and movement corridors. Adaptive management approach to climate change and ocean acidification. Scientific research and monitoring including public sighting initiatives. Promotion and/or production of existing codes of conduct.
	Invertebrates e.g. European spiny lobster: *Palinurus elephas*	UKBAP	Fishing By-catch Pollution and contaminants Climate change and ocean acidification impacts on prey distribution	Insufficient data about longevity and fecundity but fecundity known to be lower for this sp. than other spiny lobster spp. rendering them more vulnerable to over-exploitation and impacts and slow to recover	Restriction of activities incompatible with invertebrate conservation. This may include closed areas. Protection of critical habitats and movement corridors. Scientific research and monitoring.

TABLE 2. MANAGEMENT OPTIONS FOR MPAs

Activity	Pressure	Impact	Features	MPA management instrument	'Wider seas' instrument
Fisheries	Mobile gear: scallop dredging Mobile gear: trawling	Physical disturbance Smothering Direct mortality By-catch	Flame shell Horse mussel beds Maerl Seagrass Native Oyster Biogenic reefs Burrowed deep muddy habitats Seamounts Mobile spp.	Marine (Scotland Act) s.85 marine conservation order. (spatial &/or temporal s.85c, speed restrictions s.86 (2)a) Urgent orders s.88 Assessment of impact s.91	• Including fisheries in EIA – Amendment to Schedule 2 of The Environmental Impact Assessment (Scotland) Regulations. • Inshore fishery order: Inshore Fishing (Scotland) Act 1984. • Shellfish Management Order. The Sea Fisheries (Shellfish) Act 1967. • Including impact mitigation into IFG management plans. SEA of management plans. • Social, economic and ecological objectives in MSP. • VMS tracking. • Offshore: enforcement under the Offshore Marine Conservation (Natural Habitats, &c.)(Amendment) Regulations 2007/2010. • Offshore: CFP technical conservation measures. • Regulatory reform to CFP (Control Regulations) and Scottish Technical measures for protection of offshore Scottish MPAs. • Scientific monitoring of impacts and recovery including minimal damage measures. • Species protection pillar (eg, NCA 2004). • Voluntary market initiatives, eg, ecolabelling.
	Hand collection	Physical disturbance	Native oyster	s.85 marine conservation order	• Inshore fishery order: Inshore Fishing (Scotland) Act 1984.
	Fixed gear (creels)	Physical disturbance	Muddy habitats / sea pens	s.85 marine conservation order	• Including fisheries in EIA & SEA. • Inshore fishery order: Inshore Fishing (Scotland) Act 1984. • Including impact mitigation into IFG management plans. • Scientific monitoring of impacts. • Mutual development opportunities. • Voluntary market initiatives, eg, ecolabelling.

Activity	Pressure	Impact	Features	MPA management instrument	'Wider seas' instrument
Aquaculture	Proximity of cages to features	Nutrient enrichment Smothering Dissolved oxygen Contamination	Tidally swept communities Biogenic reefs Burrowed deep muddy habitats Seagrass Burrowing deep mud Mobile species	s.85 marine conservation order (spatial)	• EIA (for new developments). • Spatial planning through regional MSP to avoid sensitive sites and areas. • Licensing instruments: local authority & Marine Scotland development and farm siting consents. Town and Country Planning Marine Fish Farming (Scotland) Order 2007. • Development of buffer zones. • Stricter discharge consents under Water Environment (Controlled Activities) (Scotland) Regulations (2005) if near priority features. • Scientific monitoring of impacts. • Identification of new opportunities, eg, integrated developments, offshore sites.
Coastal infrastructure	Building fixed structures, eg, renewable devices, bridges, cables and pipelines	Physical disturbance Altered hydrology Turbidity	Tidally swept communities Biogenic reefs Burrowed deep muddy habitats Seagrass Seamounts Mobile species	s.85 marine conservation order	• EIA and SEA for new developments taking into account impact on features or occurring in proximity to MPAs. • MSP: national and regional planning and objectives. • Inclusion of MPA and MSP into the National Planning Framework(The Planning etc. (Scotland) Act 2006, Part 1 s.3A). • Strategic and local development planning in local authorities (part 2, The Planning etc. (Scotland) Act 2006). • Part II of the Food and Environment Protection Act *1985* (*FEPA*). • Crown Estate licence / lease. • The Merchant Shipping Act and Merchant Shipping and Maritime Security Act 1997 (Ports near MPAs). • Licensing under s.36 The Electricity Act 1989 s.36. • Biodiversity Duty under NCA 2004.
Recreation and marine tourism	Local anchorages and moorings Vessels traveling at speed	Physical disturbance Collisions	Biogenic reefs Seagrass Burrowed deep mud Mobile species	s.85 marine conservation order	• Crown Estate mooring license. • Species pillar actions. • Licensing through Marine (Scotland) Act 2010. • Regional MSP for marinas and moorings in proximity to MPAs. • Green-Blue Initiative. • Wild Scotland and Best Practice Guidelines. • Scottish Outdoor Access Code.

Activity	Pressure	Impact	Features	MPA management instrument	'Wider seas' instrument
Land based run-off from agriculture, sewage	Water pollution: eutrophication, heavy metals		Biogenic reefs (coastal based) Seagrass Native Oyster	s.85 marine conservation order	• Water Environment and Water Services (Scotland) Act 2003. • The Water Environment (Controlled Activities) (Scotland) Regulations 2005 – license for point and diffuse pollution. • Linking to MPAs: The Water Environment (Register of Protected Areas) (Scotland) Regulations 2004. • Codes of conduct and guidance.
Dumping		Smothering Pollution	Biogenic reefs Seagrass Native Oyster Burrowing deep mud	s.85 marine conservation order	• Part II of the Food and Environment Protection Act *1985* (*FEPA*). • Marine spatial planning and licensing under the Marine (Scotland) Act 2010.
Dredging (sediment)		Turbidity	Biogenic reefs Seagrass Native Oyster Burrowing deep mud		• Part II of the Food and Environment Protection Act *1985* (*FEPA*). • Marine spatial planning and licensing under the Marine (Scotland) Act 2010.
Shipping and marine scientific research			Seamounts Mobile species		• The Merchant Shipping Act and Merchant Shipping and Maritime Security Act 1997. • Marine spatial planning. • IMO Particularly Sensitive Sea Areas. • The Offshore Marine Conservation (Natural Habitats, & c.) Regulations 2007. • Marine Environment High Risk Areas (MEHRAs; UK instrument under MARPOL).

General recommendations for sound MPA management

During the preparation of this document several themes have emerged in terms of recommendations for sound marine MPA management. We highlight the key recommendations below:

Recommendation 1

Damaging activities within sites must be managed, and on the other side, activities that are harmonious and have minimal impacts should be encouraged. All activities, impacts and ecological processes should be monitored in MPA sites and be the basis of adaptive (co) management, particularly in the context of climate change.

Recommendation 2

A precautionary management approach must be adopted where there is a lack of data, and where our understanding of habitat functional roles is rudimentary. Again, this is crucial in the context of climate change.

Recommendation 3

Base MPA management and decision-making on the best currently available scientific knowledge from various branches of science, including ecological, social, and economic (Cicin-Sain & Belfiore 2005).

Recommendation 4

Continuously invest in MPA research, including ecological, social, and economic considerations (Angulo-Valdés & Hatcher 2010).

Recommendation 5

Long term monitoring must be carried out, including recovery studies, because protected areas are only effective if they are monitored. Monitoring allows for adaptive management of MPAs. However, we acknowledge that monitoring is challenging in regions far from shore, in deep-water and for offshore seamounts, for example.

Recommendation 6

Encourage opportunities for appropriate access to and/or compatible use of marine resources consistent with MPA management plans. If damaging activity is occurring to priority marine features, the regulatory levers of wider seas measures such as the Inshore Fishing Act or conservation orders under the Marine (Scotland) Act will be increasingly required to ensure the success of NC-MPAs. Zoning and spatial planning can be used to manage, restrict or exclude activities incompatible with MPA conservation. Options include spatial management and the use of buffer zones. No- take zones which are permanently protected from all preventable anthropogenic threats will be appropriate in some cases.

Recommendation 7

Implementation of a new order will require significant momentum and consultation if it is to exclude existing activities and be based on scientific assessments of the impact of activities on the ecological requirements of the protected feature. Orders from the Inshore Fishing (Scotland) Act and the Sea Fisheries (Shellfish) Act are developed on the prerogative of the minister and are therefore subject to political will. Fundamentally, the use of the instruments in the Marine (Scotland) Act also require political will to be successful.

Recommendation 8

Another alternative strategy for fisheries and other sectors is to proactively engage in including impact mitigation measures and strategies into Inshore Fishing Group (IFG) management plans. This would be a clear signal by the industry that priority features and MPAs are factored into inshore fisheries management. We recommend that the links between IFGs, marine planning and MPAs be explored and clarified.

Recommendation 9

It is essential to ensure that the ecological requirements of species are met through long-term MPA design and management. A coherent MPA network must include sites and critical habitats that are fundamental to the survival of mobile species. MPA sites should be linked by corridors for improved recruitment and movement of mobile species.

Recommendation 10

Clearly define MPA objectives in a transparent and inclusive manner. Establishing clear objectives is critical, builds trust, and allows for assessment of an MPA's success. Clearly stated conservation objectives from the outset will facilitate public involvement in MPAs, enable provisions for compensating those displaced from an MPA through appropriate mechanisms and allow for a meaningful assessment of MPA effectiveness (Angulo-Valdés & Hatcher 2010) under the Marine (Scotland) Act.

Recommendation 11

Commit to creating common understanding and interpretation of the significance of MPAs among stakeholders. If this is not achieved, MPA management will likely be beset with tension and threaten community stability (Oracion et al. 2005).

Recommendation 12

Commit to increased public awareness about ecosystem functioning and the role of MPAs (Angulo-Valdés & Hatcher 2010). This is also very important in the context of climate change.




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