

MMO Consultation and Call for Evidence on damaging fishing activity in England's MPAs - Stages 2 and 3

March 2023

Wildlife and Countryside Link (Link) is the largest environment and wildlife coalition in England, bringing together 70 organisations to use their strong joint voice for the protection of nature. Our members campaign to conserve, enhance and access our landscapes, animals, plants, habitats, rivers and seas. Together we have the support of over eight million people in the UK and directly protect over 750,000 hectares of land and 800 miles of coastline.

This response covers both Stage 2 and Stage 3 of the Marine Management Organisation (MMO) programme to manage fishing activity impacts in marine protected areas (MPAs). Overall, we welcome these measures which are providing much-needed new protections for our degraded marine environment. However, we believe that to ensure the success of the programme, the measures must go further and faster. Our concerns cover the scope of proposed protections (which do not apply to the whole area of most of the sites), the lack of a strategic approach which covers all of our seas, the importance of buffer zones, particularly for ephemeral features, and the required monitoring of vessels which is essential to ensure compliance. Further, while fishing is one of the main negative impacts on MPAs, MPAs must be protected from *all* activities which negatively impact protected features.

This response is supported by the following Link members:

- Friends of the Earth (England)
- Institute of Fisheries Management
- Marine Conservation Society
- National Trust
- ORCA
- RSPB
- Whale and Dolphin Conservation
- WWF-UK
- Zoological Society of London

Key recommendations:

The programme must adopt a Whole Site Approach to management

We note that a number of management options were considered when developing these draft byelaws. Option 3 was: "Removal of pressures via a whole site prohibition across all

sites. The use of bottom towed gear will be prohibited throughout the MMO section of all sites considered in this assessment.”¹ We are disappointed that Option 2, which takes a features-based approach, is the MMO’s preferred option. Option 3, the Whole Site Approach, would have undoubtedly delivered greater protections for nature, helping restore entire ecosystems on which individual features depend and contributing towards the delivery of the Government’s legally binding MPA targets.² The benefits of the Whole Site Approach are numerous:

- Recognises the inherent connectivity of ecosystems in the marine environment

Marine ecosystems are generally open systems which face influences from across a given area. Mobile species, currents, seasons, water temperatures, and other oceanographic processes will influence an entire site. Indeed, many species are not limited to the features of a site and their health depends on the state of the seas around them; hence why protecting a limited area of ‘features’ will not deliver the required benefits for marine life.

- Allows a return of historic habitats and ecosystems

Effective management of our MPAs should start from the recognition that the marine environment has been fundamentally altered by human activities over the last 150 years. Our seas have less complexity, species richness and habitat diversity.

Activities such as demersal bottom trawling have degraded many habitats compared to their undamaged baseline, and current management measures don’t consider this context. This is because the ‘features’ of MPAs are only a small fraction of their historical range. Oysters provide a good example of this, with their reefs once covering a vastly larger area.³ Other examples can be found through comparison of existing, impacted communities with epibenthic surveys for the 1900s, 1980s and 2000s.⁴ From the early 1900s, as the impact of industrial fishing has grown, there have been declines in epibenthic species in the North Sea due to the removal of large bodied fauna (e.g. horse mussel, queen scallop), damage to vulnerable fragile shell organisms (e.g. transparent razor shell) or those with vulnerable tests (e.g. the heart urchins). Epibenthic communities have therefore changed to favour small robust species that can escape the direct impact of trawled gear or have the capability to survive, regenerate or have higher reproduction rates. Loss of sessile or

¹ In the consultation documents, the MMO notes that Option 3 “would remove the impact of bottom towed fishing activities from all areas of all the sites. This will help to achieve the conservation objectives of the sites and give the best possible chance of restoring the features to favourable condition”

² See https://www.wcl.org.uk/docs/Environment_Act_targets_consultation_response.pdf

³ Unnatural History of the Sea, Professor Callum Roberts, 2007

⁴ <https://cronfa.swan.ac.uk/Record/cronfa13082>

biogenic species that provide habitats for other species (e.g. horn wrack or dead man's fingers) may have indirectly led to the decline of associated species (e.g. porcelain crab, velvet shell and sea slugs). Given the level of community change, conservation targets should therefore be based on the earliest available data as natural baselines.

Our goal should be to recover our MPAs to these natural baselines; their pre-industrial states.⁵ The difficulty of this under the 'features' approach is that some animals can take decades to recover and will rely on habitats not currently defined as features. For example, ocean quahog can live over 50 years, while maerl beds and deep sea vulnerable marine ecosystems grow over 100s of years.⁶

As MPAs do recover (as is the intention of the Government's 2042 MPA feature target), having hard boundaries around existing features limits the ability for the adaption of management in response to natural processes. The goal of our network should be to recover mosaics of interconnected habitats and species.⁷

- Protecting only features fails to capture full environmental benefits of sites

Taking a Whole Site Approach will enable a more holistic approach to management, protecting wider marine habitats and the species they support. For instance, recent work both by academics and the Inshore Fisheries Conservation Authorities (IFCAs) has demonstrated that the interstitial habitats, buffers around features and 'sediment veneers' could have as much ecological importance as the feature for which the site is designated. Excluding these areas from management leaves them unprotected.

- Increases resilience of MPAs from a changing climate

Protecting the whole site will increase MPA resilience, so these marine assets are better able to respond to long-term pressures and damaging human activities, as well as increasing resilience the effects of climate change.⁸ Furthermore, it will allow sites to recover more swiftly from individual events such as storms and pollution incidents.⁹

- Stronger protection for important blue carbon habitats

A Whole Site Approach could increase the climate benefits of blue carbon habitats, reducing the potential for both sediment carbon release and the impairment of

⁵ <https://www.wcl.org.uk/docs/Link%20position%20paper%20on%20whole%20site%20approach.pdf>

⁶ <https://www.wcl.org.uk/docs/Link%20position%20paper%20on%20whole%20site%20approach.pdf>

⁷ See <https://linkinghub.elsevier.com/retrieve/pii/B9780081026984000095>

⁸ <https://www.frontiersin.org/articles/10.3389/fmars.2021.671427/full>

⁹ <https://www.frontiersin.org/articles/10.3389/fmars.2021.671427/full>

carbon sequestration and storage. This is primarily due to the reduction in benthic sediment disturbance and degradation.¹⁰ Research suggests that MPAs only provide these mitigation or adaptation benefits when they are protected in full.¹¹

- Better understood by the public and fishers

A Whole Site Approach also has the potential to be better understood by a wider range of stakeholders¹². There is widespread concern about plastic pollution, overfishing and climate change, and high support for ocean protection amongst the public.¹³ A Whole Site Approach is more in line with the public perception of an MPA and will be more logical - in a management context - to the public.

Further, the fragmented nature, small size, various shapes and points of the proposed byelaws will make it hard for fishers to understand, learn and avoid.

- Within the legal powers of the MMO

The MMO has argued that its legal duty is to manage just the features of sites, so they would need compelling evidence on connectivity of ecosystems to be able to manage across the site. As the above sets out, we believe that there is already compelling evidence that sites consist of connected ecosystems which depend on the health of the whole site.

If anything, management has been falling below its legal requirements over recent years. Fishing has been given some years grace in being allowed to continue unassessed and unmanaged.

Further, legislation derived from the Habitats Regulations already provides the ability to better protect MPAs with management measures, and we simply need to apply them more fully or move – in law – to a Whole Site Approach to management.

¹⁰ [https://www.cell.com/one-earth/fulltext/S2590-3322\(22\)00480-8?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2590332222004808%3Fshowall%3Dtrue](https://www.cell.com/one-earth/fulltext/S2590-3322(22)00480-8?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2590332222004808%3Fshowall%3Dtrue)

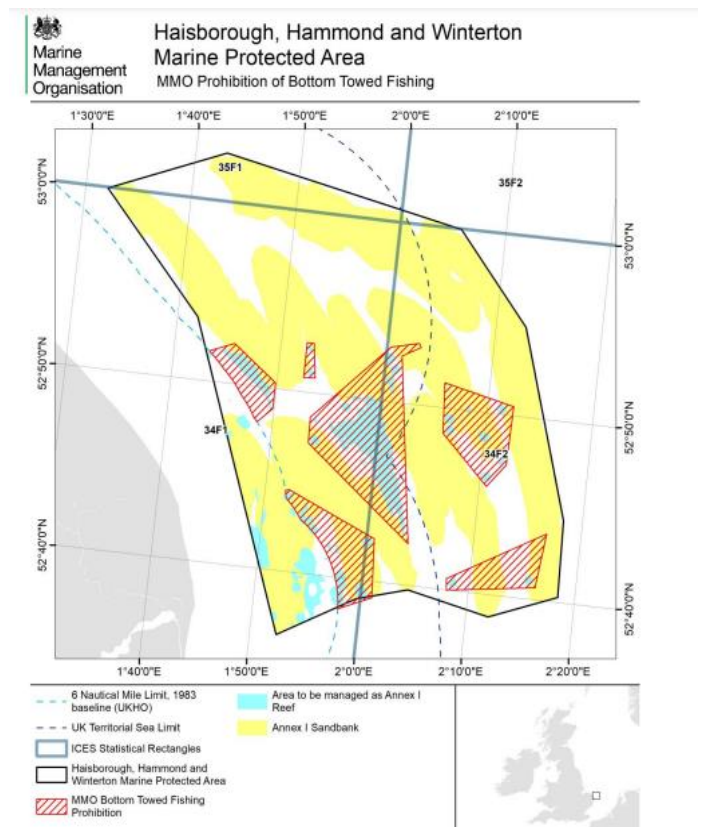
¹¹ Ideally to the level of 'fully' or 'highly' protected according to IUCN definitions
[https://www.cell.com/one-earth/fulltext/S2590-3322\(22\)00480-8?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2590332222004808%3Fshowall%3Dtrue](https://www.cell.com/one-earth/fulltext/S2590-3322(22)00480-8?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2590332222004808%3Fshowall%3Dtrue)

¹² <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0189011>

¹³ Almost three-quarters (73%) of Britons say ocean wildlife needs more protection, with just 11% believing that marine life is protected the right amount - <https://www.wcl.org.uk/brits-say-better-protection-for-ocean-needed.asp>

The programme requires a greater commitment to monitoring and management of regulations:

Monitoring of activity in our MPAs is currently reliant on the use of standard Vessel Monitoring System (VMS) devices which send a location update around every 2 hours. We are concerned that regulators may be overly optimistic about the reliability of this technology in ensuring compliance owing to the low resolution of data that the VMS system can provide¹⁴. The difficulties of monitoring vessels with VMS are greater when only MPA features are protected as opposed to the whole site. The Haisborough, Hammond and Winterton MPA byelaw, see right, demonstrates this problem. The areas covered by the byelaw (in red stripes) are fragmented and a vessel running at 6 knots could cover 12nm in the 2 hours between VMS location reporting. Ascertaining whether this activity has respected the relevant byelaws will be extremely difficult for regulators, particularly in the East of the site where most bottom towed gear activity is occurring.¹⁵ In addition, there is the difficulty of dealing with boats which may have lost power to the VMS system. It is unclear whether the MMO are adequately following-up with boats which suffer a systems malfunction and there is inadequate public data on how well this system is working. Because VMS data is owned by the vessels, this can only be obtained with permission of the boat itself, meaning that third parties cannot properly assess the functioning of the system. This is at odds with other environmental regulations, where greater transparency is the norm.



Further, manual visual monitoring of an offence is still required in order to bring a prosecution against a vessel which has broken the rules. With the monitoring programme lacking the funds to deliver widespread in-person monitoring of boats, this means that the regulations lack teeth, raising the risk of non-compliance.

¹⁴ https://research.bangor.ac.uk/portal/files/20262679/VMS_AIS_Comparison_type_set_proof.pdf

¹⁵ MMO data provided to stakeholders on Bottom Towed Gear VMS activity

In order to address these concerns and ensure compliance with the proposed byelaws, we recommend:

- **Transparency.** Information on prosecutions is made publicly available. The public should be able to see what action is being taken by regulators.
- **Funding.** The MMO must make the case to the Government for greater resources for monitoring and management. Ministers' commitments to 30x30 cannot be delivered on the cheap, and an effective system requires fly overs, boats, new technologies, visual observations, and onshore analysts to assess the data and undertake enforcement action. However, the MMO budget for Marine Nature Conservation and Coastal Operations was only around £6m in 2013/14¹⁶. Wildlife and Countryside Link has previously estimated that around £90m is actually required for world-class monitoring and management.¹⁷ This figure comes from an extrapolation from an eftec study conducted in 2018,¹⁸ which found that, in terms of generic management, a typical MPA may require between £400k and £900k as one-off establishment costs. Further, recurring resources are required of up to 4 FTE staff per MPA and running costs of up to £200k per year. This assessment does not include the costs of any MPA specific measures, nor does it include area wide enforcement. These indicative costs compare with the current average spend of just £44k across all six MPAs within the North Devon marine area for example.
- **Remote Electronic Monitoring (REM).** While we appreciate that REM is a policy being developed within Defra, we want to highlight the importance of this technology to the current proposals. REM with cameras on vessels has been shown to be a cost-effective way to supplement observer data collection. In 2017, SeaScope Fisheries Research for WWF calculated that full REM costs per vessel per year were £3,785 (with EMFF grant subsidy) or £5,290 (without EMFF subsidy).¹⁹ For the current 1,276 over 10m vessels in the UK (as a start), this equates to between £4.8 and £6.75million. That is less than 1% of the value of the seafood caught by these boats and a fraction of the £20m or more that is spent on current monitoring. With REM costs also decreasing year on year, the technology represents an excellent investment into the health of our seas. The benefits for the MMO programme are clear, REM sensor and positional data can be available in near-real time, while video review data can be completed and uploaded within two weeks of receipt of the raw

¹⁶ https://consult.defra.gov.uk/triennial-reviews/triennial-review-mmo/supporting_documents/Summary%20of%20MMO%20Activities.pdf

¹⁷ https://www.wcl.org.uk/docs/Autumn_Budget_Spending_Review%202021_representation-%20WCL-1.PDF

¹⁸ <https://ukseasproject.org.uk/cms-data/reports/North%20Devon%20Marine%20Protected%20Areas%20Cost%20Evaluation%20-%20Final%20Report.pdf>

¹⁹ https://www.wwf.org.uk/sites/default/files/2017-10/Remote%20Electronic%20Monitoring%20in%20UK%20Fisheries%20Management_WWF.pdf

data. This can then allow managers to respond more quickly to events in real time. Furthermore, visual data should be able to provide supplementary evidence should suspected offences occur.

Our response to specific Stage 2 questions:

1. Do you have any additional information about the location, condition, or sensitivity of the designated feature(s)?

As noted above, effective management of our MPAs should start from the recognition that the marine environment has been fundamentally altered by human activities over the last 150 years. Our seas have less complexity, species richness and habitat diversity. As such, this programme should, where possible, be assessing the *historic* nature of features as well as the *present* condition.

We believe that evidence from Lamlash Bay, where scallop populations, for example, have increased considerably, shows that adopting a full site closure will lead to a huge boost in a site's ecological richness.²⁰ MMO scientists should be conducting assessments of sites of a similar ecological nature even if these are outside of English waters; this could help establish what is the potential for recovery, rather than simply determining the exact degraded state of our MPAs.

2. Do you have information about the level or nature of fishing activity within one of the MPAs?

<any additions welcome>

3. Do you agree or disagree with the proposed management measures?

We agree with the measures in part, however, with just 3 sites set to be protected in full in Stage 2, this represents a missed opportunity to deliver more effective measures. As explained above, we believe that 'option 3' - the Whole Site Approach - should be extended across the MPA network.

4. How will the proposed management measures affect you? Please provide supporting evidence if possible.

N/a

²⁰ <https://www.arrancoast.com/the-recovery-of-the-commercially-valuable-scallop-species-under-different-forms-of-protection-around-the-isle-of-arran-james-l/>

5. What other effects could the proposed management measures have? Please provide supporting evidence if possible.

The Consultation documents note that “The addition of management measures (Option 2, 3 or 4) could lead to displacement of fishing activities to sensitive habitats elsewhere in English seas”. However, there is no comprehensive plan for dealing with this issue, such as assessing the need for reductions in fleet capacity. The risk is that fishing activity simply intensifies outside MPAs, harming wildlife through bycatch, for example, and threatening the achievement of the wider Government goal of Good Environmental Status across our seas. This is against a backdrop of increasing demand for space in our seas, with the Government’s welcome target to deliver 50GW of offshore wind by 2030. We believe that the following points must be addressed as the MMO programme progresses:

- **Marine Spatial Prioritisation programme.** There is no clear management objective across our seas and these byelaws cannot be implemented in isolation if they are to contribute to the recovery of our marine biodiversity. Current Marine Plans still lack the strategic or spatial road map to supporting the achievement of GES and delivering net zero targets whilst supporting ocean recovery following an ecosystem-based approach. We are concerned about current plans’ abilities to address emerging challenges including cumulative impacts, displacement and colocation in the face of the rapid expansion of offshore wind development. As such, the byelaws need to be delivered as part of a more comprehensive spatial plan framework for managing our marine environment. The Marine Spatial Prioritisation Programme announced in 2021 was supposed to help address some of these issues, better taking into consideration activities and developments in the spatial management of our seas, including fisheries or the unprecedented deployment of offshore wind in English waters. However, the programme’s evolution is unclear and lacks transparency. We are yet to see any outputs from this programme. For these byelaws to maximise their benefits on the marine environment, they must be embedded in a larger framework to sustainably and strategically manage our seas, avoiding displacement effects or the accumulation of pressures from activities at sea.
- **Fisheries policy must operate hand in glove with marine protection policy.** There can be no more siloed working across the Government’s marine policy agenda. It is essential that the new Joint Fisheries Statement (JFS) objectives are considered throughout the MMOs work.²¹ These objectives include the ecosystem objective:

²¹ These are the Sustainability objective, Precautionary objective, Ecosystem objective, Scientific evidence objective, Bycatch objective, Equal access objective, National benefit objective, Climate change objective.

“An ecosystem-based approach is defined in the Act as ‘an approach which (a) ensures that the collective pressure of human activities is kept within levels compatible with the achievement of GES within the meaning of the Marine Strategy Regulations 2010, and (b) does not compromise the capacity of marine ecosystems to respond to human-induced changes.’”²² The consultation documents reveal that 298 UK fishing vessels are likely to be directly affected by the prohibition of bottom towed fishing gears within the proposed management areas for Stage 2. The ‘collective pressure of human activities’ will therefore clearly be relevantly altered, with a risk that activity intensifies in areas around MPAs. Whether the collective pressure of these activities should be reduced in order to meet the ecosystem objective should be a question of primary concern for fisheries policy.

Our response to Stage 3 questions:

1. Do you have any additional evidence about the interactions of fishing gear and MPA seabed features?

Forage fish represent a source of prey which is of primary importance for many animals including threatened marine mammals and seabirds. It is vital that MPAs which protect nursery and spawning grounds for forage fish are comprehensively protected.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1119399/Joint_Fisheries_Statement_JFS_2022_Final.pdf

²² Ibid

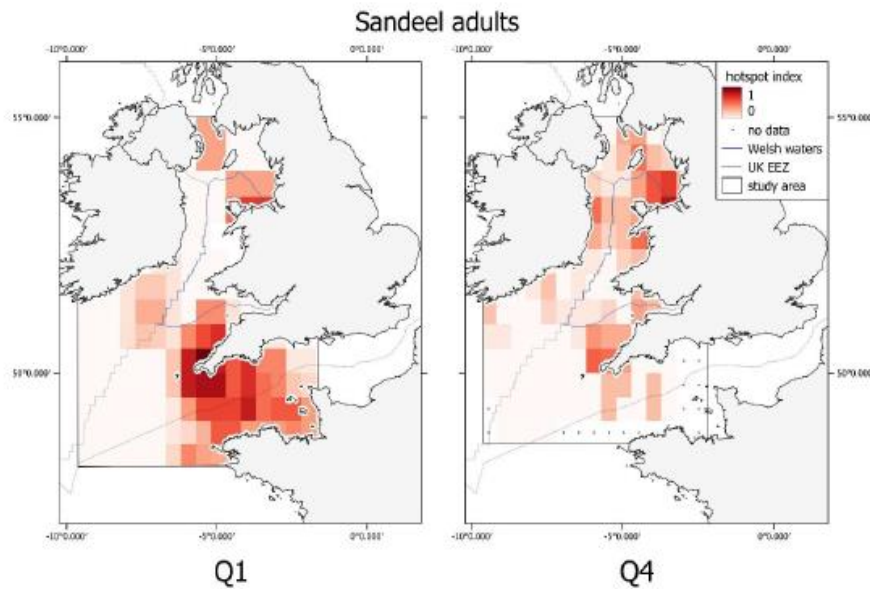
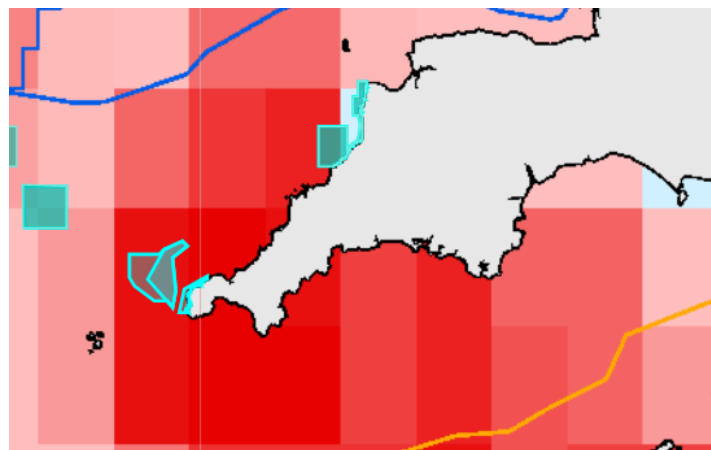


Figure 13 - Hotspot maps of adult sandeel (multiple species) in Welsh and surrounding waters in Quarter 1 (February-April) and 4 (September-December). Please note that grid-cells for which no data were available in a particular Quarter are left blank with a point in the centre.

The maps above and below demonstrate the importance of sites such as Land's End and Cape Bank, Cape Bank, East of Haig Fras or Hartland Point to Tintagel for sandeels, a key forage species for seabirds as well as much of the UK's marine biodiversity, including commercially significant fish species.²³



2. Do you agree with the MMO analysis of the available evidence provided in each gear document? If not, please provide details.

Although the consultation documents acknowledge the role of traps and nets in harming marine mammals, we believe that the evidence provided has underplayed the damage they cause to the wider marine environment through bycatch. While marine mammals may not

²³ See https://birdwatchireland.ie/app/uploads/2023/02/1.-Spawning-and-nursery-grounds-of-forage-fish_CEFAS.pdf

be classed as protected features in most MPAs, it is disappointing that a programme to limit damaging fishing activity does not address one of the main threats to marine mammal life. Though we welcome the proposed prohibition of bottom-towed gear(s), we have serious concerns that this prohibition, be it over the whole site or only where features occur, is likely to lead to the risk of a gear switching and increases in gillnetting in the area. Any increase in gillnetting is likely to increase bycatch risk for cetaceans.

Accepting that this programme is only looking at features, the harm from bycatch, and the impact this will have on the wider marine environment, must still be more clearly acknowledged. Indeed, bycatch in fishing gear is globally recognised as the largest anthropogenic threat to marine mammals with gillnets being documented as the highest risk gear category for cetacean entanglements.

Gill nets

Wherever there is spatial overlap between gillnet fisheries and small cetacean distributions, particularly harbour porpoise, bycatch will occur at some level. The annual estimates for harbour porpoise bycatch in all UK gill net fisheries for 2018 was 1150 individuals (range 845-1633), for common dolphin it was 248 individuals (range 171-452), and for seals 474 individuals (range 376-691).²⁴ As cetacean species are long-lived with low natural mortality rates and low breeding productivity, human induced mortality of individuals results in impeded population recovery times even under favourable environmental conditions.²⁵ Thus, mortality from gillnet bycatch can have significant, long-term population impacts^{26 27}.

Further, entanglement of marine mammals in gillnets results in a wide range of recorded injuries, including cuts, abrasions, broken bones, and suffering associated with forced submersion, which are significant in terms of animal welfare.²⁸

Static pots and traps

²⁴ Northridge, S., Kingston, A., and Thomas, L. 2019. Annual report on the implementation of Council Regulation (EC) No 812/2004 during 2018. <https://bit.ly/3ZBy5ZM>

²⁵ Hamilton, S., Baker, G.B. 2019. Technical mitigation to reduce marine mammal bycatch and entanglement in commercial fishing gear: lessons learnt and future directions. *Rev Fish Biol Fisheries*. 29, 223–247. <https://doi.org/10.1007/s11160-019-09550-6>

²⁶ Read, A.J. 2008. The looming crisis: interactions between marine mammals and fisheries. *J Mammal*. 89, 541–548. <https://doi.org/10.1644/07-MAMM-S-315R1.1>

²⁷ Reeves, R.R., McClellan, K., Werner, T.B. 2013. Marine mammal bycatch in gillnet and other entangling net fisheries, 1990 to 2011. *Endanger Species Res*. 20, 71–97. <https://doi.org/10.3354/esr00481>

²⁸ Dolman, S. J. and Brakes, P. 2018. Sustainable fisheries management and the welfare of bycaught and entangled cetaceans. *Front Vet Sci*. 5, 287. <https://doi.org/10.3389/fvets.2018.00287>

Whale entanglement in static pot and trap fisheries has been globally identified as a major cause of baleen whale mortality, with bycatch in pots and traps documented for humpback whales in western Australia²⁹, minke whales in the Republic of Korea³⁰ and North Atlantic right whales in the north-eastern USA and Canada.³¹ A recent study in Scotland revealed that an estimated six humpback whales, 30 minke whales, and 30 basking sharks are caught in the groundline of creel fleets each year.³² These numbers are both a conservation and welfare concern for these species, with the estimated minke whale entanglement numbers being three times greater than the Potential Biological Removal for the species in that area. With thousands of miles of rope from fishing activities in the water at any given time, creel fishing poses a high risk of entanglement to cetaceans and sharks in UK waters.

The groundline, where entanglements have been found to occur, is typically made of buoyant rope causing it to form loops in the water column rather than lying on the seabed. There are various mitigation measures and alternative gears which can reduce the risk of entanglements in pot and trap fishing gear. Negatively buoyant groundline has successfully been trialled and adopted in the USA where fixed-gear fisheries are required to use sinking or neutrally buoyant ropes for their groundlines.³³ WDC is working with a group of fishers in Scotland to trial sinking groundline and assess the feasibility of its use across UK pot and trap fisheries.

Bycatch results in damage to the protected features of MPAs

Research over the last decade has shown that the presence of cetaceans is key to the functioning of healthy marine ecosystems³⁴. By diving deep to feed, and surfacing to breathe, they circulate nutrients within the water column that might otherwise sink to the sea floor. Their faeces contain nutrients, particularly phosphorous, nitrogen and iron which

²⁹ How, J.R., de la Mare, W.K., Coughran, D.K., Double, M.C., de Lestang, S. 2021. Gear modifications reduced humpback whale entanglements in a commercial rock lobster fishery. *Mar Mamm Sci.* 37, 782–806. <https://doi.org/10.1111/mms.12774>

³⁰ Song, K., Kim, Z., Zhang, C.I., Kim, Y.H. 2010. Fishing gears involved in entanglements of minke whales (*Balaenoptera acutorostrata*) in the East Sea of Korea. *Mar Mamm Sci.* 26, 282–295. <https://doi.org/10.1111/j.1748-7692.2009.00340.x>

³¹ Knowlton, A.R., Hamilton, P.K., Marx, M.K., Pettis, H.M., Kraus, S.D. 2012. Monitoring North Atlantic right whale *Eubalaena glacialis* entanglement rates: a 30 yr retrospective. *Mar Ecol Prog Ser.* 466, 293–302. <https://doi.org/10.3354/meps09923>

³² Leaper, R., MacLennan, E., Brownlow, A., Calderan, S.V., Dyke, K., Evans, P.G.H., Hartny-Mills, L., Jarvis, D., McWhinnie, L., Philp, A., Read, F.L., Robinson, K.P., and Ryan, C. 2022. Estimates of humpback and minke whale entanglements in the Scottish static pot (creel) fishery. *Endang Species Res.* 49, 217–232. <https://doi.org/10.3354/esr01214>

³³ NMFS (National Marine Fisheries Service), NOAA (National Oceanic and Atmospheric Administration), US Dept of Commerce. 2007. Taking of marine mammals incidental to commercial fishing operations; Atlantic Large Whale Take Reduction Plan Regulations. *Fed Reg.* 72, 57103–57194

³⁴ James, V.C., Asmutis-Silvia, R., Ritter, F., Iñíguez, M., Fuchs, A., 2021. Whales, Their Future Is Our Future. Whale and Dolphin Conservation.

are released when they defecate at or near the surface. These nutrients are essential for photosynthesis allowing phytoplankton to grow, which form the basis of the food web. Through photosynthesis, phytoplankton absorb around 40% of the carbon dioxide in the atmosphere³⁵ contributing to the mitigation of climate change.

Whilst research to date has been focussed on large whales, early research is demonstrating that, whilst small cetaceans do not typically undertake extensive migrations which would transport nutrients over long distances like migratory species of large whales, their movement between coastal and offshore ecosystems is key in the transport of nutrients between these areas. Spinner dolphins in the Maldives and Chagos archipelagos, for example, forage offshore at night, and enter coastal lagoons during the day for resting, where they deposit an estimated 288kg of nitrogen per year.³⁶ As the dolphin pods are resident year-round, it is likely that they enhance coral reef productivity by bringing in these nutrients.

Cetaceans in the UK are estimated to store 2 million tonnes of carbon on their bodies, and cycle 60,000 tonnes of nitrogen per year.³⁷ The UK's harbour porpoise population is estimated to store 1,148 tonnes of carbon as living biomass, while the minke whale population in UK waters is estimated as storing 16,190 tonnes of carbon.

Protective measures to support recovery of damaged and degraded marine habitats and achieve GES for sensitive and ETP species are welcomed. However, management measures should be implemented to benefit whole sites/ecosystems, and as part of a coherent network of protected areas to achieve success towards ecosystem recovery, halting species decline and addressing the climate crisis. We are concerned about the unambitious scope of protections proposed, the lack of a strategic approach to manage our seas, as well as the limited monitoring of fishing vessels and activities planned. Improved monitoring via REM or increased observer coverage is essential to ensure compliance and assess the success of management measures.

³⁵ Dryden, H., Duncan, D., 2022. Climate Disruption Caused by a Decline in Marine Biodiversity and Pollution. IJECC 3414–3436. <https://doi.org/10.9734/ijecc/2022/v12i111392>

³⁶ Letessier, T.B., Johnston, J., Delarue, J., Martin, B., Anderson, R.C., 2022. Spinner dolphin residency in tropical atoll lagoons: Diurnal presence, seasonal variability and implications for nutrient dynamics. Journal of Zoology jzo.13000. <https://doi.org/10.1111/jzo.13000>

³⁷ Sheehy, J.M., Taylor, N.L., Zwerschke, N., Collar, M., Morgan, V., Merayo, E., 2022. Review of Evaluation and Valuation Methods for Cetacean Regulation and Maintenance Ecosystem Services With the Joint Cetacean Protocol Data. Front. Mar. Sci. 9, 872679. <https://doi.org/10.3389/fmars.2022.872679>