

Summary document

A socio-economic analysis of a bottom- contact fishing ban in the UK

Valuing the impact on ecosystem
services within the UK's offshore benthic
MPA network

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Value of the marine environment

The marine environment has huge value to societies and economies around the world, supporting our basic existence and long-term survival. This extends from providing food for local communities to generating oxygen, absorbing carbon dioxide emissions, and mitigating global warming. The benefits that mankind derives from nature are described as *ecosystem services* and these are delivered by assets of *natural capital*.

A key paper by [Costanza et al. \(1997\)](#) was influential in highlighting the economic value of natural capital and this field has grown in the years since. Today, the valuation of ecosystem services can help to inform decision makers on their importance to society and the impacts we have upon them.

The Office for National Statistics has previously valued the UK's natural capital assets at [£211 billion](#). Some of the most valuable habitats and species are within Marine Protected Areas (MPAs) that have been designated to protect marine biodiversity. Properly enforced, these areas enable the marine ecosystems and species within them to recover. This in turn increases their capacity to provide ecosystem services. However, activities such as overfishing, pollution and infrastructure development continue to affect the health of ecosystems within MPAs.

Bottom-contact fishing

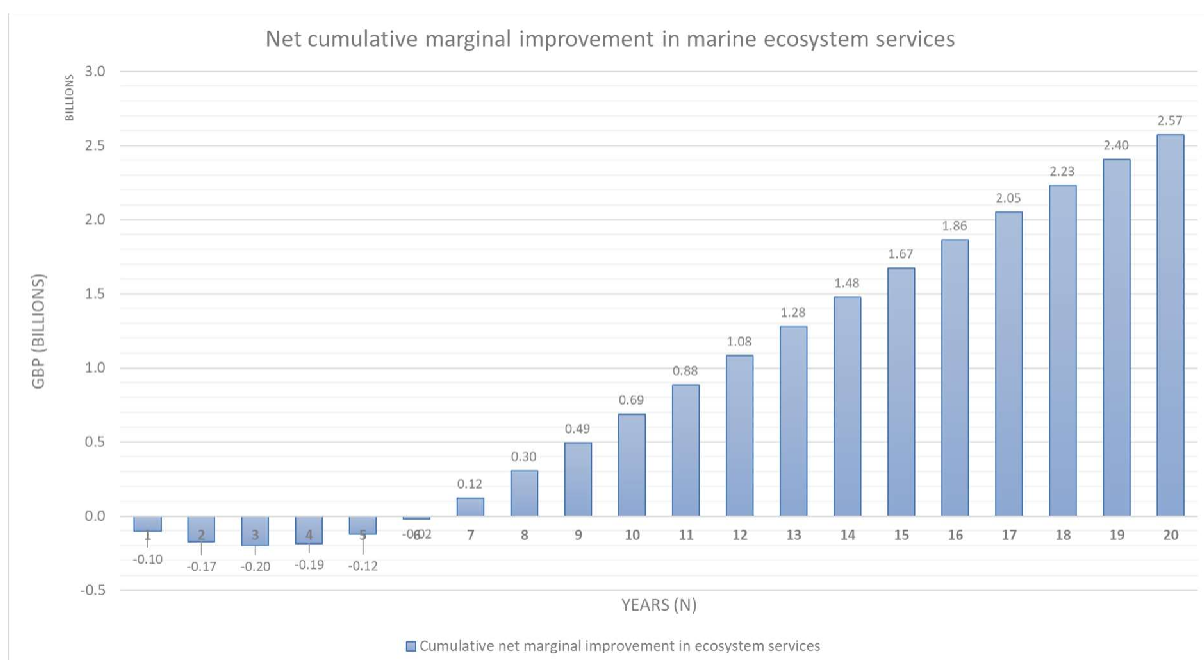
Possibly the most destructive man-made disturbance is bottom-contact fishing (including bottom trawling and dredging). Dragging heavy gear across the seabed destroys species and habitats living on the seabed and resuspends buried sediments, including long-term stores of carbon. The [Marine Conservation Society](#) has previously found that bottom-contact fishing is taking place in 98% of the UK's offshore Marine Protected Areas (MPAs). Allowing destructive activity within MPAs undermines the purpose for which they were created and reduces their benefits to society. However, banning this activity within MPAs could allow protected ecosystems to recover and significantly enhance their socioeconomic value. This value should increase over time as ecosystems are allowed to recover.

The socioeconomic impact of a ban on bottom-contact fishing

Using methods and financial valuations from [related research](#), the model predicts how much a range of marine ecosystem services would increase in value across different

habitat types found in the UK's offshore benthic MPA network over a 20-year period.¹ This was applied to the total area of mapped habitats that are currently subject to bottom trawling to give a total value in £ per hectare per year. Operational costs of implementing a ban, lost fishing values and the corresponding loss of ecosystem service value elsewhere (due to the movement of fishing activity to unprotected areas) were then subtracted from this value to reveal the expected net impact.

Considering the costs of enforcing a ban across the UK's entire offshore benthic MPA network, the results show the cumulative net impact over 20-years amounts to £2.57 billion of additional socioeconomic value for the UK, with a net positive impact achieved after seven years:



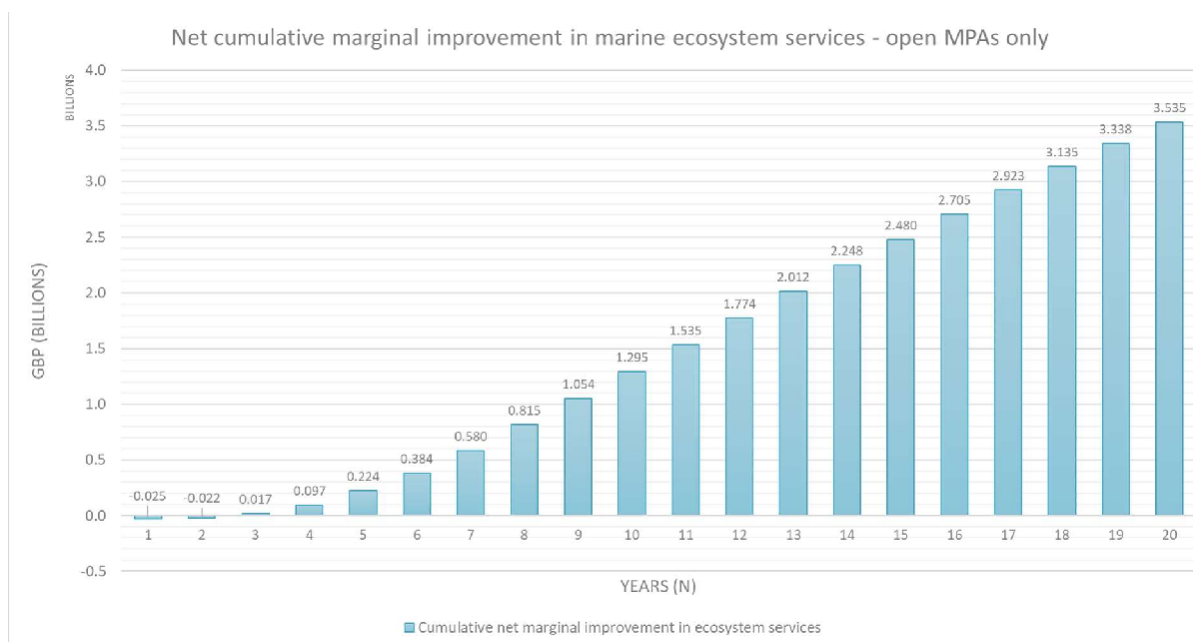
The net marginal improvement in ecosystem services following a bottom-contact fishing ban in the UK offshore benthic MPA network. Values are shown in £ billions.

Although ecosystems can require some time to recover from destructive disturbances, the increase in their capacity to deliver ecosystem services can prove highly valuable. As a result, the mid-to-long term socioeconomic benefits substantially outweigh the initial costs incurred.

In reality some areas are already closed to bottom-contact fishing. When considering only the costs of closing offshore benthic MPAs that currently remain open to bottom-contact fishing, the economic case in favour of a ban is strengthened. The overall net

¹ *Offshore* means MPAs that are in the UK's Exclusive Economic Zone within 12 – 200 nautical miles from the coast and *benthic* means they are designated for their seabed conservation features.

impact rises to an estimated £3.5 billion and a net positive impact could be expected in the third year following a ban:



The net marginal improvement in ecosystem services following a bottom-contact fishing ban in the UK offshore benthic MPA network, considering only the costs of closing areas of the network that are currently open to bottom-towed gear. Values are shown in £ billions.

Key messages for decision makers

The report demonstrates that it is within the interests of society and the UK economy to introduce a ban on bottom-contact fishing in the UK's offshore benthic MPA network. The overall net benefit of between £2.57 billion and £3.5 billion for the UK shows that there is far more to be gained than lost over a 20-year period. This substantial value also underlines the need to involve socioeconomic analysis and natural capital valuations in management decisions concerning the UK's MPA network.

Decision makers need to look beyond short-term costs and prioritise the long-term benefits to society. Although costs can initially outweigh the economic gains, these are short lived and are comprehensively outsized by the gains achieved over the mid-to long term. The initial net costs are in the order of hundreds of millions versus several billions in net benefits achieved over the mid-to-longer term.

Furthermore, it is important that these findings reflect not just the impact of removing bottom-contact fishing, but the importance of removing all stressors that impact the marine environment. For ecosystems to recover and increase in value, our MPAs need to be free from disturbances, extending from pollution to offshore infrastructure. If the introduction of a bottom-contact fishing ban were to be followed by the introduction of

other activities within those protected areas, the net gain found in this analysis would be diminished.

Conservative estimates

The results could be considered conservative estimates because the model used cautionary assumptions that may have underestimated the value of ecosystem services and overestimated costs. Not all ecosystem services were included as many are difficult to quantify in monetary terms, and the model did not include all MPAs (including inshore), so this remains a significant under-representation of the benefits for all UK seas. Finally, it can be argued that marine ecosystems carry infinite value to mankind given that these ecosystems are fundamentally life supporting.



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