

Annex B: Benefit studies

As discussed in the benefits section of the Impact Assessment, the lack of scientific and economic research on the Marine Environment makes analysis of the additional benefits of designation complicated. Relevant literature was reviewed for the first tranche of MCZs and an updated review was conducted for the second tranche. For recreational benefits, a detailed literature review was conducted by RPA (2013) as part of their study on the Value of the Impact of Marine Protected Areas on Recreation and Tourism Services and a wider review in relation to benefits of the marine environment was conducted by Turner et al. (2014) as part of the NEAFO work package 4 on coastal and marine ecosystem services.

The table below outlines studies reviewed whilst preparing this Impact Assessment. Annex C provides details on the Kenter et al. paper specifically which can be used to derive benefits for the 23 sites proposed for designation in the second tranche.

Ecosystem Service Category and type of value	Study	Methodology	Key Findings	Impact Assessment Applicability
Recreation – Angling: Willingness to pay for improvement in angling experience	Drew Associates Limited (2004).	A choice experiment (CE) estimated the values associated with changes in the diversity and quality of the angling experience.	All types of angler were willing to pay more for larger fish (£0.22 per 1% increase in size) and for greater diversity in the catch (£11.38 to catch different species from those usually caught). However, only shore anglers were willing to pay for more fish (£0.81 per extra fish caught). Boat anglers had a negative valuation for more fish. Assuming there are 884,000 sea anglers in England alone (Sea Angling 2012) this amounts to a wtp of £1.9m for a 1% increase fish size and £10m for different fish species.	While these figures cannot be adapted for the second tranche specifically they show a willingness to pay for improvements in the size and abundance of fish, which MCZs are expected to contribute to.
Recreational Angling: Willingness to Pay for improvement in quality of angling experience	Lawrence, K. (2005).	Choice experiment which assesses the value of the recreational sea angling experience in south west England. This included angling from boats as well as from the shore.	Anglers were found to be willing to pay £13.56 per trip for the first fish caught, and proportionately less for each additional fish caught. This represents a hypothetical total trip cost, incorporating transport, parking, accommodation and equipment, rather than a fee/charge per fish. On average, anglers were willing to pay an additional £13.27 in trip costs for a 50% increase in the size of each fish caught. Environmental quality was found to be only a minor determinant of an angler's decision on where to fish. Assuming there are 884,000 sea anglers in England alone (Sea Angling 2012) this amounts to a wtp of £11.7m.	While these figures cannot be adapted for the second tranche specifically they show a willingness to pay for improvements in the size and abundance of fish, which MCZs are expected to contribute to.
Non use value of protection for English specific MCZs	Kenter et al. (2013)	Estimated using contingent valuation of 22 Scottish potential	The report concludes that, if expressed in economic terms, the benefits to divers and sea anglers of designating marine protected areas outweigh the cost of	Study findings used for benefits figures in Impact Assessment but for illustrative

		Marine Protected Areas (pMPAs/MPA areas of search), 120 English recommended Marine Conservation Zones (MCZs) and 7 existing Welsh marine Special Areas of Conservation (SACs). The study includes consideration of how these values may alter under different management regimes. ¹	designation (consisting of monetised costs to government and industry). The study estimates benefits from designation of marine protected areas (MPAs) in England, Wales and Scotland. The counterfactual, one off non-use value of protecting the sites to divers and anglers alone would be worth £730-£1,310m (excluding divers and anglers willingness to pay for specific restrictions on other users). The research also estimated the current recreational value of MPAs to lie £1.87 – 3.39 billion for England alone. There are various limitations of the study that have been provided in Annex C.	purposes
Non-use value of protection (also likely to include some use value relating to protection)	McVittie, A. and D. Moran (2010).	Choice experiment used to estimate the WTP for a hypothetical UK network of MCZs to 'halt the loss of marine biodiversity'.	English respondents WTP £69.49/yr/hh to halt loss of biodiversity, and £3.98/yr/hh to impose moderate restriction on resource extraction. Assuming there are 22 million households in England (English Housing Survey 2012) this equates to £1.5bn and £88m respectively.	Study only presents the benefits of a hypothetical UK network. Benefits for the smaller number and area of proposed English MCZs not possibly to robustly disaggregate.
Willingness to pay for protection (use and non-use). This value is net of the loss suffered by individuals as result of restrictions on their access to the zone.	Hall, D., Hall, J. and S. Murray (2002).	Willingness to pay to preserve the rocky intertidal zone in California through additional management of public access, through a contingent valuation questionnaire.	Respondents were willing to pay an additional \$6 per visit to the coast to protect the coastline from further damage.	No 2013 MCZ could be considered to 'protect coastline from damage', therefore value not relevant.
Willingness to pay for preventing the loss of marine biodiversity: Use and non-use values.	Ressurreicao et al (2012).	This study estimated willingness to pay for preventing the loss of marine biodiversity in three case study sites in the EU, through a one-off payment to a conservation fund.	For Isles of Scilly, UK, WTP estimates were US\$70/62 (residents/visitors) to prevent a decline in the taxa of marine mammals, US\$63/56 for protect seabirds, US\$61/54 for fish, US\$59/52 to protect marine invertebrates and US\$75/66 for algae. [Other case studies: Azores islands (Portugal), Gulf of Gdansk (Poland)].	Marine mammals and seabirds not relevant for the MCZs. 'Preventing loss of marine biodiversity' is a benefit which the MCZs contribute towards, not possible to separate the proportion which they contribute.

¹ However it does not seek to establish how these values change in response to changes in the overall environmental or feature-specific condition, as the underlying science on environmental change is not available to take such an approach forward.

Many studies consider the *baseline* levels of activity, particularly for recreational services and do not consider the value of changes relative to the baseline as a result of marine conservation measures due specific policy options such as MCZs. These studies include market values as well as travel cost and contingent valuation studies. These are summarised in RPA (2013) Literature Review.

Fletcher et al (2012 (b)) also provide a review of valuation information for all ecosystem services.